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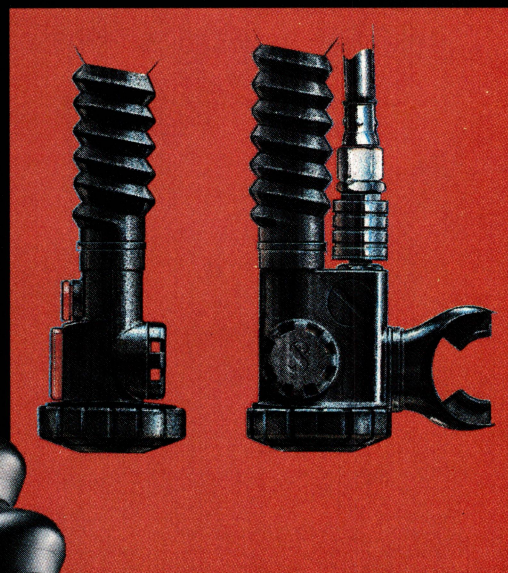
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Volume Thirty-three Number Seven

FEATURES

DEPARTMENTS

COVER

Beach diving is a very popular activity in Southern California, with lots of fish and other marine life to be found. The diver can choose sandy shores, rocky bottoms or kelp beds. Photo/Geri Murphy.

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SDM Editorial

BY THE PUBLISHER



A FEDERAL SCUBA TAX?

Just when you thought it was safe to go back into the water the Feds have unleashed another shark.

Over the past two years, this sport has been a repeated victim of the terrifying phenomenon known as the "bureaucratic frenzy"—the uncontrollable attack and feeding upon defenseless minorities.

First, the Feds tried to steal our shipwrecks by initiating countless congressional bills for the "protection" of historical underwater sites. These diabolical drafts of creative legislation were actually designed to deny sport divers their rights to dive, explore and enjoy shipwrecks, which, incidentally, were first discovered by sport divers.

Next, the Feds tried to swipe our red and white divers down flag by instituting new Coast Guard regulations that would require the use of the blue and white Alpha flag for vessels that had divers in the water. This jigsaw of technical rules and regulations threw so much confusion into the sport that dive shops ended up selling blue and white Alpha flags to individual divers. The Coast Guard is still trying to convince the dive industry that the Alpha flag is really for boats—not divers. They neglect to point out that the majority of divers enter the water from boats and are therefore subject to this new regulation.

Now comes the final blow and it's aimed right at your pocketbook. Another Federal bureau wants to take a big bite out of the diver's moneybelt by instituting an indirect and convoluted form of Federal scuba tax. The sharks are out again.

The U.S. Fish & Wildlife Service is a big time Federal bureaucracy hungry for money. A few years ago congress passed into law a special bill called the

Fish & Wildlife Conservation Act of 1980. The title of this law certainly sounds noble and I am sure every taxpaying citizen felt that at least some of their IRS contributions would be going toward the preservation of our natural resources.

There is only one catch—congress passed the law but it did not allocate general funding to carry out the program. Instead, it left the job of finding money to the U.S. Fish & Wildlife Service and a special congressional committee. The obvious solution to the problem is to find *additional* ways to tax the already burdened taxpayer. This time they are going after the outdoor sportsman, including the scuba diver. The device being proposed is a 10 percent tax on diving equipment at the manufacturer's level.

Up till now, you may be thinking, "What's so bad about a 10 percent tax that will be used for protecting our seas?" Don't be fooled by titles or names. There is nothing in the Conservation Act or U.S. Fish & Wildlife plans that indicates the proposed tax monies would be used for the development and protection of our marine resources. Nowhere in this grand plan is there any mention of additional underwater parks for use by the public, the building of ocean access points or the expansion of existing marine parks.

Much of the money collected from this Federal scuba tax would actually be eaten up in administrative costs. It's the typical bureaucratic boondoggle: get more funding for the bureau so you can hire more people to figure out more ways to get more funding. Meanwhile, the taxpaying public (in this case sport divers) is required to pay and pay and pay.

What little money is not eaten up by administrative expenses would be passed along from the Federal level to the state level for use in fish and wildlife programs. The majority of these are terrestrial in nature and have little or nothing to do with the resources used by scuba divers. Does it sound like "taxation without representation?" It will be if you don't blow the whistle on these tax schemers.

Still not convinced this 10 percent scuba tax is a bad idea? Wait, there is more. The real kicker in this scheme is that the

proposed tax would be levied against diving equipment manufacturers and distributors—far from the eyes of the consumer. Because it is levied at the manufacturer, the consumer would end up paying an estimated 20 percent more for each piece of diving equipment!

Here is how it works. The Feds charge the manufacturers a 10 percent excise tax on the equipment inventory in their warehouses. This occurs before the merchandise is ever sold or shipped. This tax raises the *base cost* of each scuba item. Now the manufacturer must add his normal sales markup to the item and the retail dive store dealer will be doing the same. Every markup in the chain of distribution will be keyed off the *base price* and that 10 percent additional cost will be repeatedly multiplied until it comes out as a 20 percent increase at the retail level.


The diving equipment manufacturers and dive store retailers are certainly not happy about this proposed tax. A 20 percent additional increase in diving equipment prices results in less equipment sold. DEMA, NASDS, PADI and many independent manufacturers and dive store dealers have already mailed protest letters to the U.S. Fish & Wildlife Service.

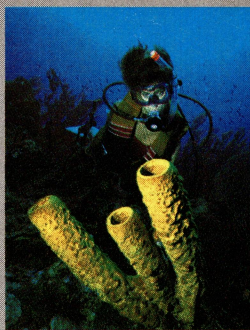
Unfortunately, protests from dive stores and manufacturers are not enough. The bureaucrats and law-makers in Washington hear this kind of thing all the time. They call it special interest lobbying and generally ignore protests from small and weak industries such as the dive business.

At this point, I suppose I might normally say, "You can help the sport of diving." Not this time. We are facing a crisis in which you need to help yourself. We are being railroaded into paying a discriminatory tax for something we don't need, cannot use and don't want.

You can stop this unfair scuba tax by writing a letter of protest to:

Associate Director
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U.S. Fish & Wildlife Service
U.S. Department of the Interior
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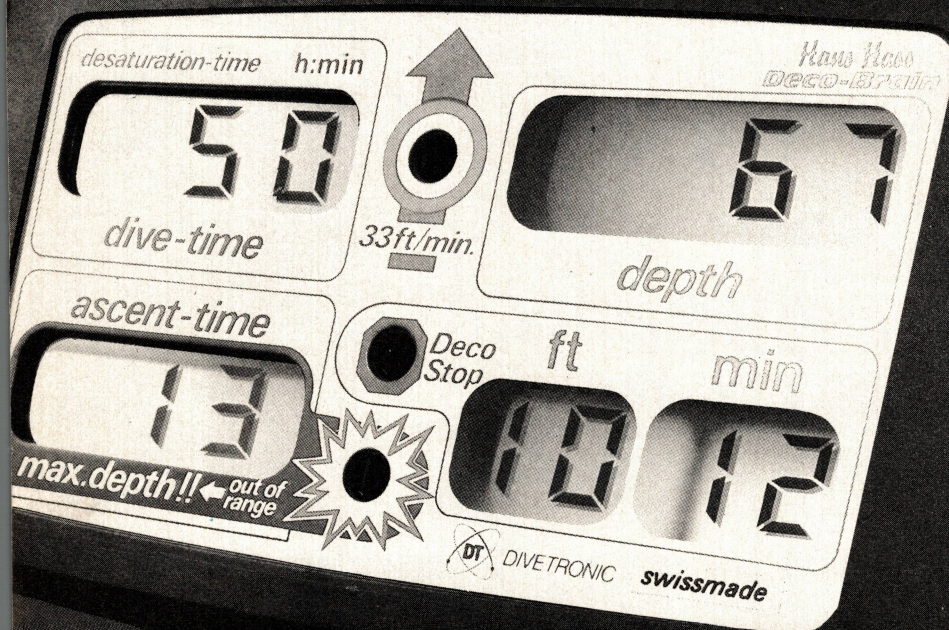
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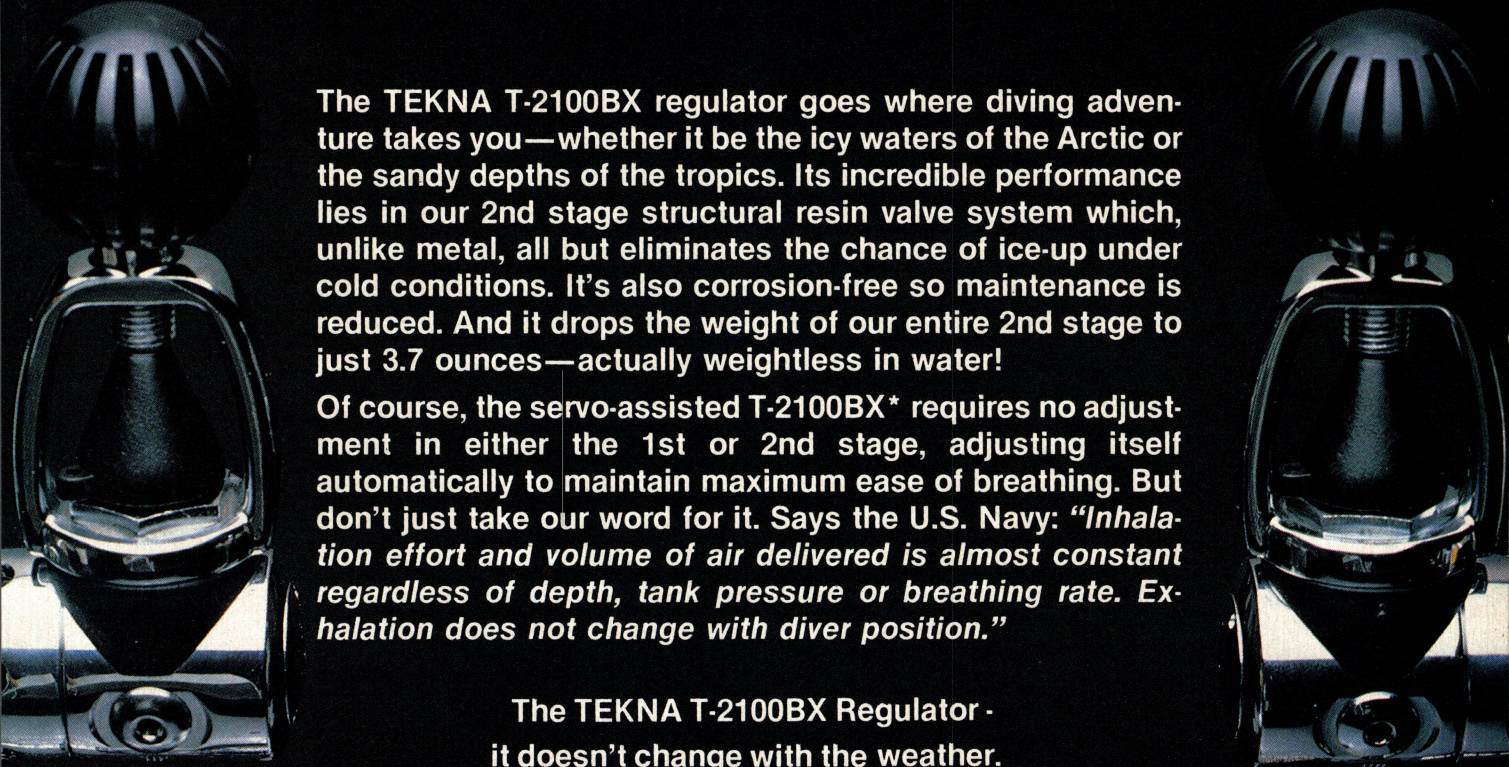
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Wreck Facts



BY ELLSWORTH BOYD

Several divers have inquired about the wreck of the *Marine Electric*, a coal ship that sank in February 1983, 30 miles southeast of Ocean City, Maryland. The 605 foot ship, carrying 23,000 tons of coal, capsized in a storm that took the lives of all but three of its 34 crewmen. A Coast Guard diving team discovered the wreck broken in two in 120 feet of water. The superstructures of the ship are about 100 yards apart with piles of coal strewn between them. Smaller sections of the vessel lie near the stern.

Accounts of the wreck appeared daily for several weeks in Maryland newspapers where the Coast Guard made it very clear that the collier remained the property of the Marine Coal Transportation Corporation. Sport divers with integrity stayed off the wreck. They realized that salvage efforts could be labeled tampering and ruin court cases brought against the owners by the three survivors and several widows of the crewmen who were lost at sea. Faulty hatch covers, a questionable repair to the bow and the general condition of the hull of the 39 year old collier were being cited as possible causes of the sinking. Nevertheless, several unscrupulous local divers invaded the gravesite of the *Marine Electric* and removed items that could have had a bearing on the outcome of the court cases. The divers are being sued in U.S. District Court, Baltimore by Marine Coal Transport Corporation. I strongly urge divers who are interested in the ship to contact the Coast Guard in Annapolis and verify the current status of the wreck before attempting to dive her.

Joe Zarzynski, Wilton, New York asks about the *Henry Endicott*, sunk off Massachusetts in 1939. Joe attended Henry

B. Endicott Junior High and wonders if they are one and the same man. We owe thanks to Jim Jenny, Saunderstown, Rhode Island, for tracking her down: Schooner-Barge *Henry Endicott*, probably originally built as a schooner and later relegated to the barge fleet; wooden hull 191 x 35 x 16 feet, 866 gross tons; wrecked September 18, 1939, a little over two miles SE of Manomet, Maine. Type of disaster: foundered at sea; cargo—a locomotive; coordinates: 41-55-00N, 70-29-00W. Other possible sources for details: records of the American Bureau of Shipping, Boston and New York newspapers for 1939, U.S. Coast Guard records and the book, *A Guide To Sunk Ships In American Waters*, by Kaplan and Lonsdale.

Jim Jenny has recently initiated the Nationwide Shipwreck Data Base, a computerized clearinghouse of more than 20,000 vessels. Over 7,000 of them are in the New England area alone. Jenny, a diver, historian and author is projecting 100,000 to 250,000 wreck sites for future computerization in his data bank. His present inventory categorizes each wreck statistically and narratively, including history, nicknames, cargoes, etc. For further information, write to Jim Jenny, P.O. Box 144, Saunderstown, RI 02874.

For those of you who did not receive a copy of the first edition of the Maritime Heritage Quarterly Newsletter, write to: Charlie McKinney, P.O. Box 27272, Central Station, Washington, D.C. 20005. Charlie, the executive director of Atlantic Alliance for Maritime Heritage Conservation, has some copies left that he will distribute first come, first served. (Enclose a stamped, self-addressed envelope.) The Alliance, a non-profit organization, hopes

to bridge the gap between sport divers and archaeologists, while closely monitoring state and federal legislative proposals that might threaten wreck divers.

Jeff Riegel, Bradley, Illinois collects artifacts from early colonial sites and is interested in branching into shipwreck memorabilia. There is an interesting publication, Jeff, called *Nautical Brass*, P.O. Box 744, Montrose, California 91020, that specializes in all kinds of nautical antiques. An informative bi-monthly periodical, it lists collectors, artifacts for sale, shipwrecks of special interest and maritime trivia. Jeff also asked where auctions are held for artifacts recovered from Spanish galleons. I don't know, Jeff, but our readers might. Jeff's address is: 996 Flamingo Lane, Bradley, IL 60915.

Divers who are fascinated by Spanish galleons will be interested in a new book by Duncan Mathewson—*Archaeological Treasure: The Search for Nuestra Senora de Atocha*. Mathewson, archaeological consultant for Mel Fisher's Treasure Salvors, Key West, Florida, presents an accurate account of how he and Fisher's divers pieced together one of the greatest archaeological jigsaw puzzles of all time. Thirty-two photographs, plus details of the ship's manifest, depict how the artifacts of this 1622 Spanish galleon were recovered and preserved. The *Atocha's* coins, cannons, daggers, ingots and various personal effects from affluent passengers become archaeological and historical treasures, researched, catalogued and vividly described by the author. The book is available from: Seafarers Heritage Library, Box 73, Woodstock, Vermont 05091.

Some Great Lakes divers do not know about Kim Stabelfeldt who has written, *Wreck Divers' Handbook*, *Explore Wisconsin Shipwrecks*, and *Guide to Great Lakes Charters*. He is working on two more books which will be published soon. Kim runs Stabelfeldt Publications and Book Store and puts out lists of books and periodicals all about Great Lakes shipwrecks. He prints an up to date list of charter boats too. If you are interested, write to Kim: 7844 St. Anne Court, Wauwatosa, Wisconsin 53213.

Truk Lagoon addicts will want a copy of: *World War II Wrecks of the Kwajalein and Truk Lagoons* by Dan Bailey. This new publication includes a detailed account of the air strikes on major Japanese bases at Kwajalein and Truk with war photos of ships under attack. There are vivid descriptions of the ships, aircraft and wrecks. Bailey has some enticing underwater photos of bombers, submarines and battleships, all taken when he was a member of the Roi-Namua Dolphins Scuba Club of Kwajalein Atoll. His book, and a beautiful Palau Wreck Diver's map, are a result of nearly 2,000 dives and 13 years of research. The book and map may be ordered from: North Valley Diver

(Continued on Page 122)



WATER *Please*

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Scuba Quiz

Category: Ear Clearing Techniques

By Dennis Graver

Equalizing pressure in the ears is something divers must do on every dive. Blowing against closed nose and mouth is the most commonly used technique, but there are other methods. See if you are clear on the various techniques. The answers are on the following page. Note: For questions 1-7 match each equalization technique with the correct description of the maneuver. For the remaining questions, select the most correct response for each.

Technique

1. Valsalva
2. Frenzel
3. Beance Tubaire Voluntaire (BTV)
4. Toynbee
5. Lowry
6. Edmonds
7. Bassett

Method

- _____ A. Exhaling against closed mouth and blocked nostrils
- _____ B. Using tongue as a piston to compress air against closed mouth and nose

- _____ C. Voluntary opening of the eustachian tubes
- _____ D. Swallowing with mouth and nose closed
- _____ E. Swallowing while exhaling against closed mouth and nose
- _____ F. Jutting lower jaw forward while exhaling against closed mouth and nose
- _____ G. Tilting head to side while exhaling against closed mouth and nose

8. According to studies conducted among prospective divers, the percentage of people who cannot auto-inflate the middle ear is:

- ☐ A. 4%
- ☐ B. 10%
- ☐ C. 14%
- ☐ D. 19%

9. With regard to equalization, the preferred position in the water during descent is:

- ☐ A. Inverted
- ☐ B. Horizontal
- ☐ C. Upright
- ☐ D. Position makes no difference

10. The most important rule of ear clearing is to:

- ☐ A. Ascend as soon as discomfort is felt
- ☐ B. Equalize pressure early and often
- ☐ C. Descend as slowly as possible
- ☐ D. Equalize continuously during descent

11. It is necessary to ascend when pain is felt in the ears because:

- ☐ A. Equalization of the middle ear is no longer possible
- ☐ B. Rupture of the eardrum is imminent
- ☐ C. Forceful attempts at equalization can damage the inner ear
- ☐ D. All of the above are correct

12. Practicing auto-inflation of the ears on land increases the ease of clearing the ears underwater

- ☐ A. True
- ☐ B. False

Scuba Quiz

Answers: Ear Clearing Techniques

Divers should not be expected to define the maneuvers named. The purpose of the question is to stimulate interest in the different techniques and to call attention to the fact that they are documented, successful and can be effective when used separately or in combination. Answers 1-7 are: 1. A; 2. B; 3. C; 4. D; 5. E; 6. F; 7. G.

8. A. 4%. Most people complaining of inability or difficulty with regard to ear clearing suffer more from inadequate instruction than from anatomical problems. Of 200 potential diving candidates examined, 96 percent could auto-inflate successfully using the valsalva, Toynbee, Lowry or Edmonds techniques. Patience and practice are required to train the muscle groups involved, but nearly everyone can master the skill.

9. C. Upright. In an inverted or even horizontal position, gravity increases blood pressure in the head, swelling the capillaries in the membranes lining airways and reducing their diameter. Not only are the eustachian tubes larger in diameter in an upright position, but it is easier for gas to move upward in a compressible environment than to be forced downward. These same principles apply to the sinuses as well as to the ears.

10. B. Equalize pressure early and often. If this is done, discomfort and injury can be completely avoided. The ears should be overpressurized slightly before beginning descent and air added to them every two to three feet throughout the descent. As we shall see, it is important to constantly maintain a slightly greater pressure than ambient inside the ears.

11. D. All of the above are correct When pain is felt in the ears, a trap door effect has occurred. The ends of the eustachian tubes, buried in soft tissue, are being held closed by the ambient pressure, making equalization nearly impossible. Ascending to reduce the pressure is necessary to allow equalization to take place.

12. A. True. Equalization is a natural process which takes place without thought through swallowing and yawning when on land. When we try to make the process voluntary so we can cope with increased pressures underwater, it requires the training of muscle groups we are not used to controlling. By working with the muscles of the throat and tongue, we can learn to control them and open the eustachian tubes voluntarily.

Ear clearing is one of the most important skills in diving, and is needed by every diver on every dive. Failure to properly equalize pressure in the ears during descent can result in disorientation and panic, middle ear infections, hearing loss, ringing in the ears, surgery and even permanent damage. All of this can be avoided simply by employing recommended techniques.

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Diver's Calendar

July 7-8 Fourth Annual Monterey Beach Dive Photo Competition. (Contact: Don McMahan, UPS/Northern California, 15750 Via Coluso, San Lorenzo, California 94580)

July 13-15 SeaFest '84, an underwater exposition to benefit the Palm Beach Science Museum and Planetarium. (Contact: Granville Wood, PGA Sheraton Resort, 400 Avenue of the Champions, Palm Beach Gardens, FL 33410)

July 15-October 15 Ocean Poets will review manuscripts of divers' poetry for a planned anthology "The Scuba Diving Experience." Poets should send no more than five poems, 40 lines maximum: category A—free style; category B—ballads. (Contact: Ocean Poets, Suite 740, 507 Third Ave., Seattle, Washington 98104-2355)

July 21-22 Third Annual Wisconsin Dive Jamboree. Treasure hunt, campfire slide show, fish boil, volleyball and tug of war. Sunday activities held at Sunset Park, Sturgeon Bay, Wisconsin. (Contact: Badger State Divers Club, P.O. Box 505, Waukesha, Wisconsin 53187 or telephone (414) 762-3175)

August 1-October 31 PADI's Sixth Annual Underwater Photo Search/Competition. (Contact: your local participating PADI Training Facility)

August 2-4 Greater Fort Lauderdale Shipwreck Symposium. Films and presentations by celebrities, archaeological training seminars and wreck diver certification. (Contact: Broward County Historical Commission, 100-B SE New River Drive, Ft. Lauderdale, FL 33301)

August 25-26 Mid Ohio Divers Swap Meet and Jamboree, Cletus Quarry, Mansfield, OH. Free admission, booths \$4/day for members and \$6/day for non-members. (Contact: Jim Brown (419) 468-7940)

September 7-8 San Diego Underwater Film Festival, San Diego, CA. (Contact: Dee Miller (619) 287-4155)

September 8-9 First Annual Underwater Fun Festival sponsored by the Klamath County Dive Rescue Team. Contests, night dive, chili feed. (Contact: Klamath County Dive Rescue, c/o Sheriff's Department, Court House, Klamath Falls, Oregon 97601)

September 9 Fifth Annual Divers Swap Meet, sponsored by the Santa Ana College Dive Club at the college pool. Everyone welcome, no fees. (Contact: Jim Taylor, 22011-J Rimhurst Dr., El Toro, California 92630)

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Technifacts

BY E.R. CROSS



A SKIN DIVER reader in Canada wrote, "The November, 1983 Technifacts mentioned the AGA Divator scuba system. Please send me the address and telephone number of a dealer."

The only dealer for this equipment that I know in the United States is M and E Marine Supply Co., Inc., P.O. Box 601, Camden, NJ 08101. The number is (609) 962-8719. Their 1983 catalogue showed this unit was available.

The AGA unit has a number of features important to commercial divers that would also be advantageous to sport divers where cost of equipment is overridden by need. It is considered one of the

easiest breathing units available, probably because of its precision engineering and manufacture. It is also expensive, selling for about \$2,700 complete.

NAVY SALVORS HANDBOOK

For the past 50 years or so a number of semi-technical papers have been produced dealing with the various disciplines of ship salvage, most of them need-to-know information for divers and diving and salvage officers and available only to students of military diving schools. Some of these papers were developed prior to WW II and were included in the old, loose leaf diving manual called the C

& R Diving Manual (for the Construction and Repair Department of the then Bureau of Ships). Others were written, mostly by diving and salvage officers, at either the diving school at Washington, D.C. or the Ship Salvage School first at Pier 88 in New York and later at the Salvage School at Bayonne, NJ.

A number of these unpublished papers will be found as chapters in books dealing with ship salvage published in recent years. Nearly all, but with several either missed, not available or not deemed pertinent, have been rewritten, re-illustrated and published in a small manual entitled

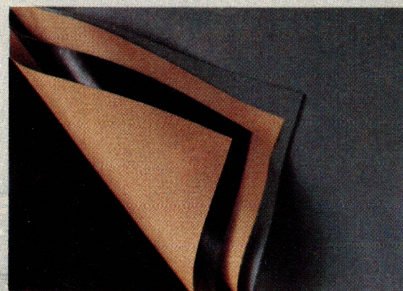
(Continued on Page 83)

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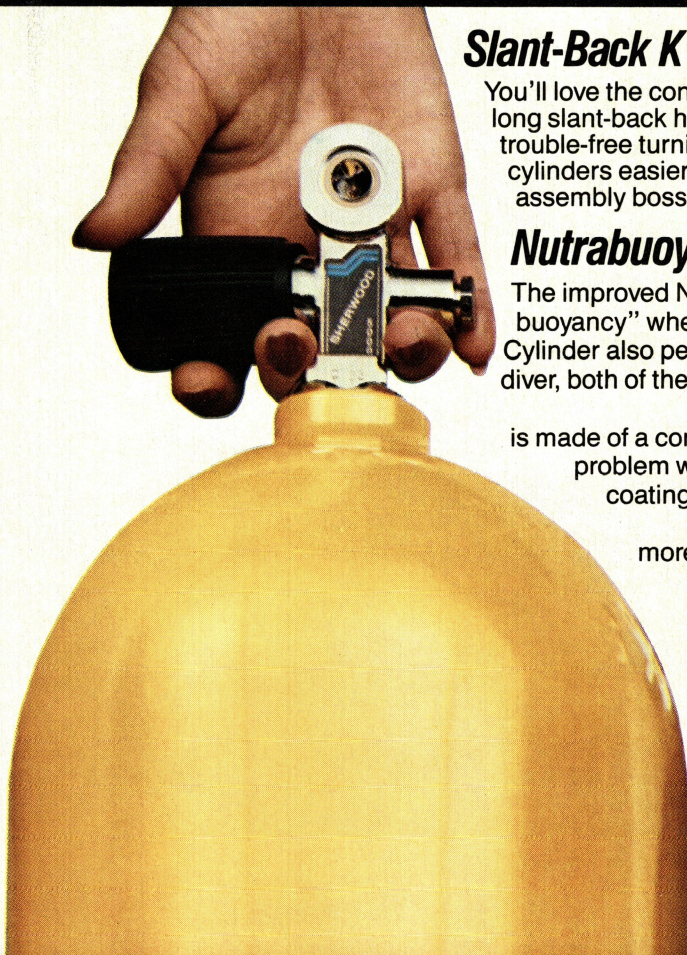
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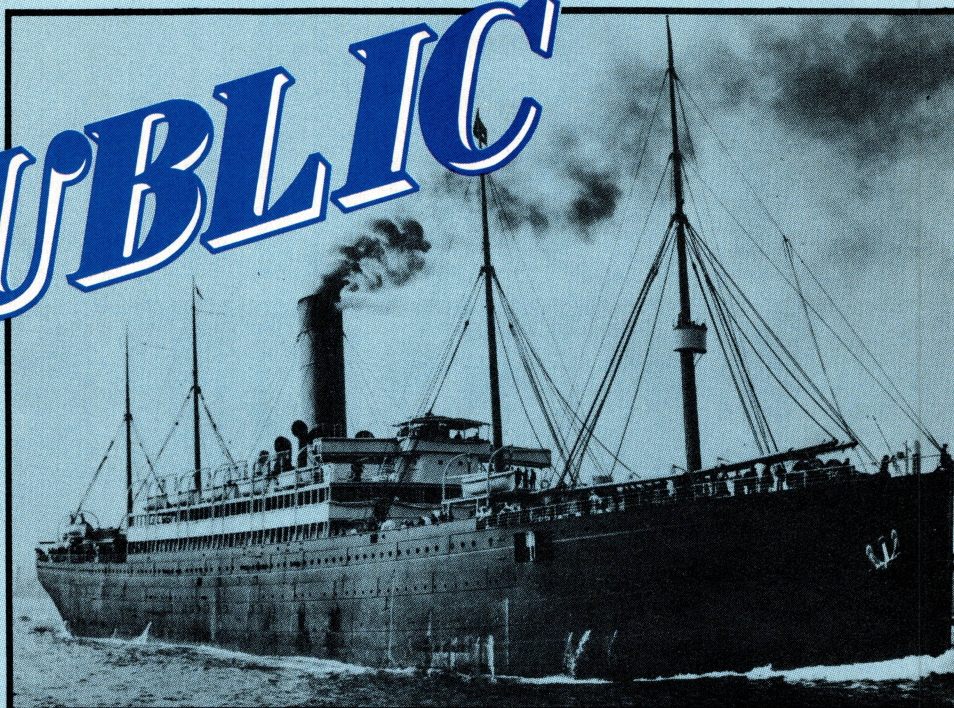
BY ELLSWORTH BOYD

A modern-day James Bond thriller is shaping up off the shores of Nantucket as divers clamor to retrieve the booty of the luxury liner, SS *Republic*, one of the most publicized treasure ships of our time. The story of the *Republic* has more sub-plots than a Russian novel, including spies, pirates, an impostor, missing documents and *lots of money!*

The protagonist of this real life drama is Marty Bayerle, of Martha's Vineyard Scuba Headquarters, an intrepid sport diver turned treasure salvor and front run-

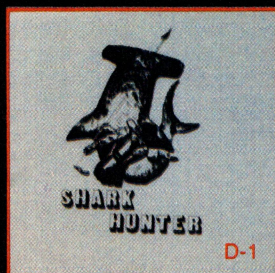
ner in the race for all the marbles. The marbles in this case consist of \$70 million in gold coins, plus inestimable riches in jewels, silverware, rare wines and cultur-

al artifacts. Bayerle has fought long and hard, including winning a case for salvage rights in Boston's U.S. District Court. His attorney, Dean Cycon from



The White Star Liner *Republic* sank in 260 feet of water in 1909 after a collision with the *Florida*. Mystery still surrounds the cargo of gold coins she reportedly carried.

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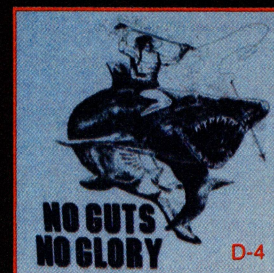
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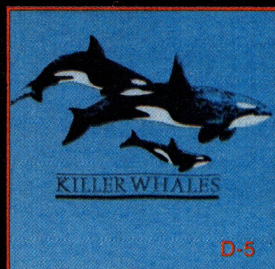
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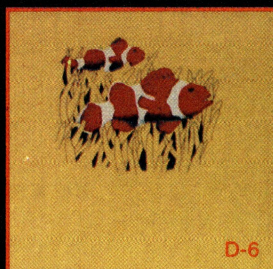
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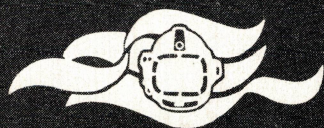
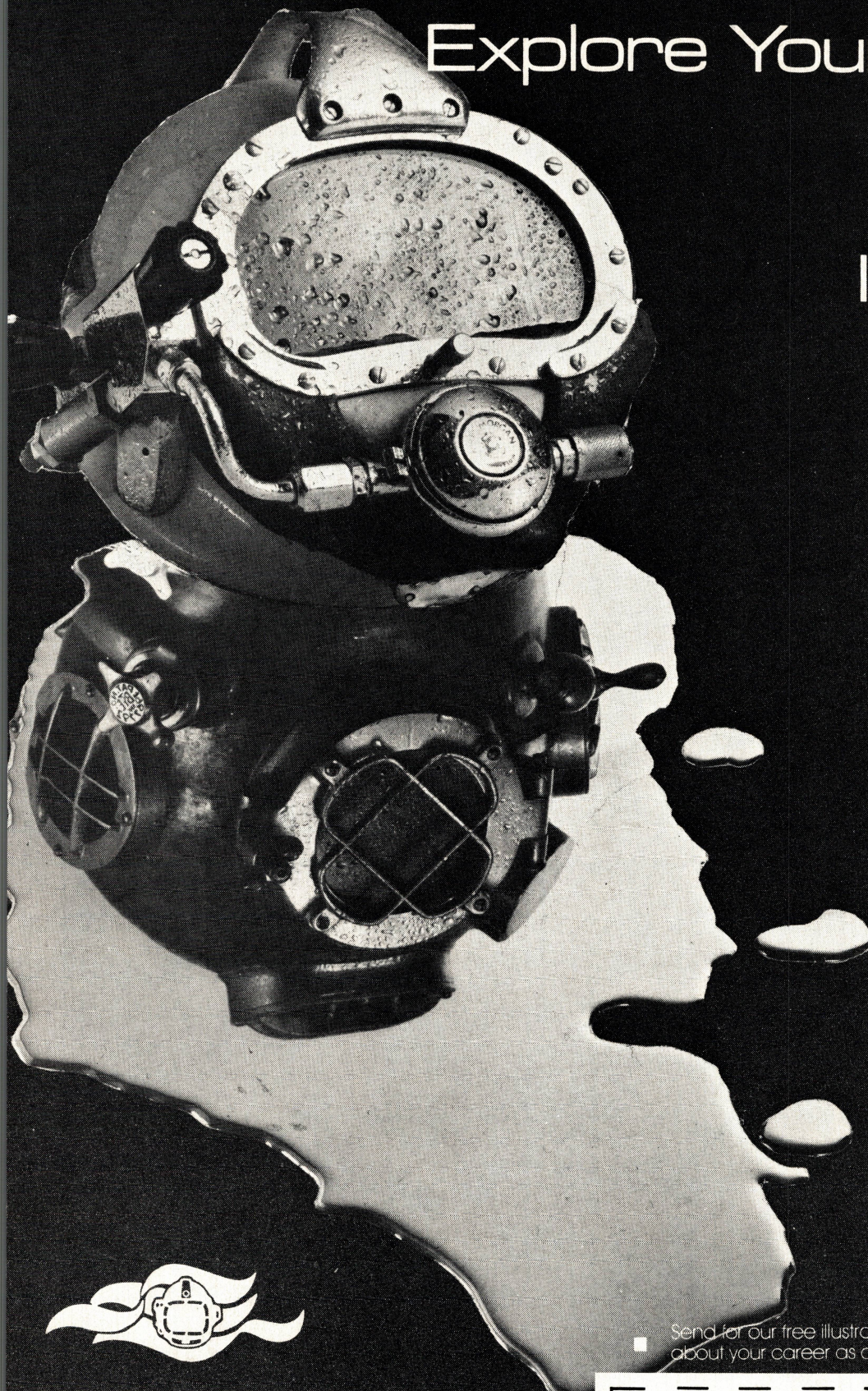
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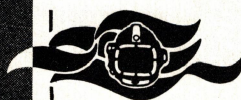
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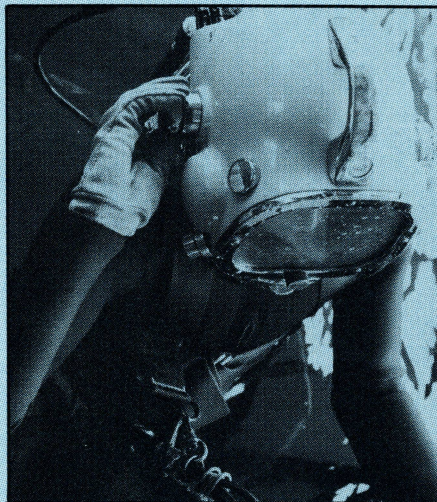
Dennis, Massachusetts, proved that Bayerle's firm was first on the site and continued in good faith the survey and reconnaissance work necessary for such a massive undertaking.

Bayerle has researched the *Republic* since 1979, sometimes working ten hours a day. He took frequent trips to Washington, D.C. to search records in the National Archives and the U.S. Treasury Department. One of his buddies who was helping Bayerle dig into the records reported that he was followed by government Secret Service and Treasury agents. Bayerle and his pal hope they were government agents because rumors ran rampant that the mob, backed by drug money filtered through a Caribbean island, was interested in backing a *Republic* expedition.

Even though Bayerle has exclusive rights through Admiralty Law to dive the treasure ship, and has buoyed it with a keep off court order claim, a modern-day band of pirates from Florida anchored on the wreck and put several divers down. But they were sport divers lacking sophisticated equipment and left after retrieving a few cups and saucers.

"The depth is prohibitive to sport div-

ers," Bayerle explains. "We're talking about 235 to 260 feet. What's more, we think the gold is in a section of the ship that's buried in 20 feet of sand." Bayerle figures it will take \$3 million to penetrate



Modern technology has enabled Marty Bayerle to plan a search of the *Republic*.

that section and other compartments of the *Republic*. A mother ship with a 50 man crew, decompression chambers, a bell/sat team, plus back-ups in men and equipment costs \$33,000 per day. "Weathered down time," when the diving

is postponed due to inclement conditions, costs \$15,000 per day. The same conditions that plagued Peter Gimbel on the *Andrea Doria*—which lies only seven miles from the *Republic*—haunt Marty Bayerle. The wreck is in heavily trafficked shipping lanes, currents are strong, visibility varies, the water is cold and sharks frequent the area. Furthermore, there is no actual proof that gold is aboard the *Republic*. But that's where the mystery and intrigue shroud the ship like a ghost swirling through a haunted house.


"Somebody," Bayerle says, "has done a blatant sanitizing job of the ship's records, which are missing from the National Archives and other government files. I reviewed a 107 page report of payroll operations of the Great White Fleet and pages 45 through 95 are missing."

The *Republic* was a White Star Line steamship. She carried 440 passengers, a general cargo, relief supplies for the Messina, Italy earthquake victims and 500 tons of military supplies for Admiral Sperry's fleet—part of the Great White Fleet—our Atlantic battleship flotilla, off Gibraltar. A payroll and money for food stores for Perry's men—\$3 million in \$10 gold eagle coins—was purported to be aboard ship. That was the gold value in 1909 when the vessel went down... the same gold today is worth \$70 million. The coin value is close to half a billion dollars.

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REPUBLIC

Spanish galleon," Bayerle says, "but you can't get one for the *Republic*." He has been able to document only 394 tons of the 500 ton military cargo and suspects that secret documents may account for the remaining 106 tons.

It was common practice in those days for gold shipments to be recorded aboard one vessel and shipped out unrecorded on another. This thwarted robbery attempts and allowed the gold to go straight to its destination undetected. A secret gold shipment such as this was usually carried in the second class baggage room of the ship, another clandestine effort to throw off crooks. Bayerle has been able to locate a schematic of the first class baggage section, but none is available for the second class room. His research has, however, revealed that the U.S. government rented the entire second class baggage room of the *Republic*. Bayerle also uncovered verification that the ship had carried gold on at least two other voyages.

Adding to the intrigue is the fact that the ship was not listed on anti-submarine warfare charts of World War II. Sunken vessels in the heavily trafficked North Atlantic shipping lanes were leveled by depth charges to prevent German U-boats from using them as cover. While the United States Navy was deliberately blowing up other wrecks in 1942 the *Republic*, an enormous underwater obstruction, was left intact.

Another fascinating angle, involves the covert efforts of millionaire J.P. Morgan. Morgan, in an effort to monopolize shipping, was acquiring steamship companies in those days. He acquired the White Star Line, but left the name intact beneath his umbrella network called International Meredith Marine Company, the same company that owned the *Titanic*. The *Titanic* went down three years after the *Republic* and the company was besieged with lawsuits. The *Titanic* was short on lifeboats and hundreds of lives were lost as a direct result. Although only four people died as a result of the *Republic* disaster, Morgan apparently panicked, fearing retroactive litigation and destroyed some of the ship's records.

There have been two other expeditions, one in 1919 and another in 1963. The first, a venture by an Illinois deepsea salvage syndicate, was unsuccessful because of the depth. The second involved an expedition called Top Cat, divers bound for the *Andrea Doria* who stumbled on the *Republic*. They drew a blank, too, because as Bayerle points out, "The technology for diving and working at extreme depths has only been developed in the past 10 to 15 years."

Modern technology might unlock the



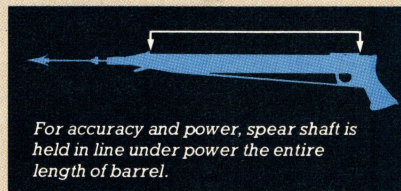
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REPUBLIC

secrets of the *Republic* in 1984, just as it saved the lives of most of its passengers and crew in 1909. The protagonist today is diver Marty Bayerle, but back in those days it was radio operator Jack Binns who used the new Marconi wireless telegraph to summon help from other ships. It was the first time the wireless, a brand spanking new invention, had demonstrated its reliability and significance in a disaster at sea.

Less than 15 hours out of New York, the *Republic*, cruising gingerly through a blanket of fog, was struck broadside by the bow of the *Florida*, a small Italian liner that was steaming 30 miles off the prescribed course for inbound ships. The *Republic's* engine rooms flooded immediately, indicating that the *Florida* had knifed more than halfway through the 68 foot beam of the White Star Liner. Like gladiators locked in mortal combat, the ships remained like one while both captains signaled a call to quarters and assessed the damages.

Aboard the *Florida*, Captain Voltolin ordered his carpenters to shore the bow's leaking bulkheads with timbers and get out quickly because he was backing off. Intuition, experience and the horrible sight of his ship almost cut in two prompted Captain Sealby of the *Republic* to abandon ship. Lifeboats were lowered and guarded while panic-stricken passengers, most dressed in night clothes and robes, assembled on deck. They had no time to dress or bring any possessions with them.

This was Jack Binns' 41st trip between America and Europe. On every one of them he had practiced what he would do in case of emergency. Now his practice became a reality, but Binns had a difficult decision to make. The SOS had been adopted recently as the national radio call signal indicating distress. But CQD—Come Quick, Danger—was still in use, particularly in the United States. Binns decided on CQD and remained at his wireless while everybody else was abandoning ship.

In a small shack on the south shore of Nantucket, a ship's traffic controller picked up the signal and relayed it to all ships at sea. Within a few hours they had enough ships to start a navy at the collision site. The *Baltic*, *Lucania*, *Gresham*, *La Lorrain* and *Senega* all responded.

The *Republic's* passengers boarded the *Florida* while they waited for help to arrive, then all passengers were transferred to the *Baltic*. It took 10 hours and 83 boatloads—1,650 people—to complete the transfer, one of the largest ever recorded at sea and the greatest open water maneuver in history. The *Florida* limped back to port while Coast Guard cutters tried to tow the *Republic* to shore.

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
REPUBLIC

But her bulkheads caved in and the 570 foot luxury liner—the second largest of its kind to sink (the *Titanic* was the largest)—sank to the bottom stern first.

Bayerle has dived the *Republic*. He and some buddies retrieved knives, forks, spoons, a butter dish, a ceremonial sword, portholes and the ship's nameplate. The stern of the *Republic* sits upright with the stack in place, perfectly straight as if the ship were still steaming toward the Mediterranean. When she sank stern first, she apparently settled and snapped in two. The remainder of the liner is resting 90 degrees on her starboard side.


After the sinking of the *Republic* and Jack Binns' heroic efforts in using a new fangled invention called a wireless, a New York Times reporter wrote: "In the on-going battle of the age of technology, who could doubt after this near disaster that science was triumphing over nature?" Seventy-five years later, Marty Bayerle is doing the exact same thing—using the age of technology to try and conquer nature, an almost impregnable guardian of her deep environment.

"We've got the technology to stay down and penetrate the *Republic*," Bayerle maintains. "It's costly and dangerous, a high risk venture, but if the risks weren't there, the gains wouldn't be either. Remember, this could be the largest find on record for recent times, of a shipwreck other than a Spanish galleon. It's a mystery too, one that somebody's got to solve. We intend to go for it!"

The *Republic* still leaks oil, a result of corroded bunkers that periodically pop a rusted seam, launching a spiral of emulsion topside. It's as if she were alive and sending some sort of signal to the adventurers waiting in line to explore her. But is her signal a summons or a warning? Marty Bayerle is the frontrunner who is trying to answer that question and many others that remain in the mysterious cargo of the White Star Liner. 

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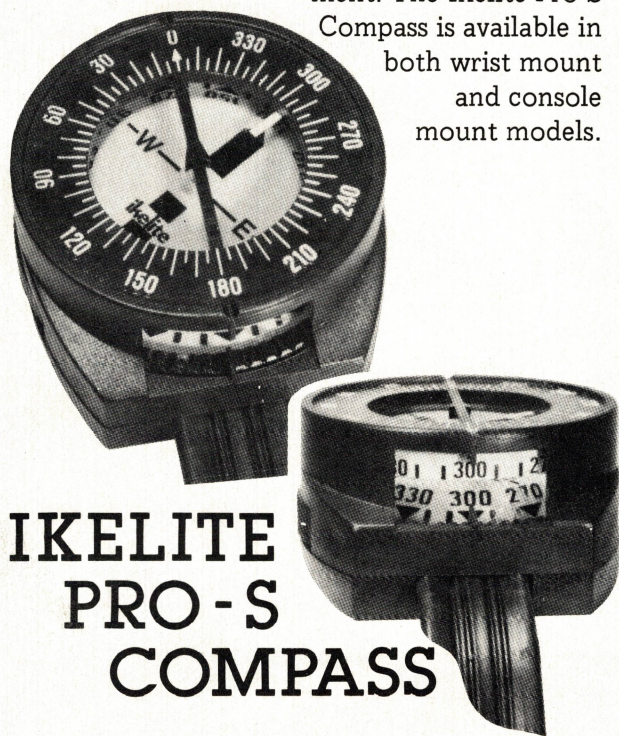
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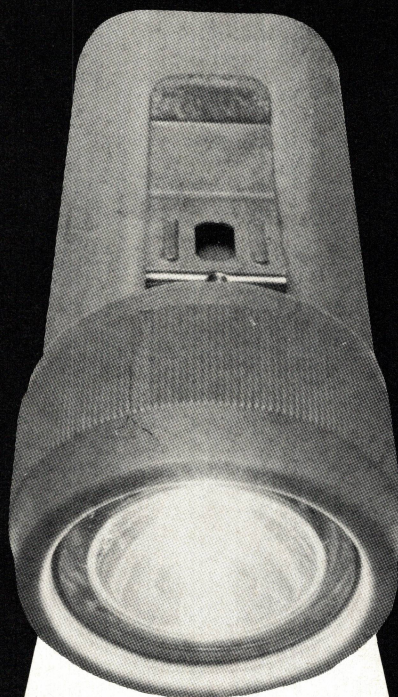

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WENOKA COMMEMORATIVE NAVY UDT



photos/courtesy U.S. Navy

photos/Robert Hoebelman

BY PETER PIIK

Sport divers, like other enthusiasts, tend to pursue their interest in the present. Occasionally, however, it doesn't hurt to take a glimpse into the past to see how things were and how they led to the present.

It so happens that 1984 is the 40th anniversary of D-Day, the invasion of Normandy, when the Allies stormed the beaches of Fortress Europe and ultimately went onto victory in World War II. The history of that war is certainly well chronicled and is not something we need to delve into in this article. However, one aspect of it does hold special interest for today's sport diver. It was during World War II that the U.S. Navy formed a unit called the Underwater Demolition Team whose members became popularly known as Frogmen. The type of diving we, as sport divers, do today is closely linked to those early Frogmen.

People like myself, who got involved with diving in the 1950s, often used surplus Navy equipment. My first set of tanks was stamped U.S. Navy and the regulator hoses were olive drab rubber. The guy who sold them to me had been in UDT operations in Korea and claimed to have a connection for top-notch surplus equipment. Fins, masks, rubber suits and knives were all originally developed for military purposes. By 1948 a Navy Frogman in full gear would have been recognizable as a diver by his sport diving

counterparts of today.

A further link with the past has been forged by Wenoka Cutlery, a company closely identified with the modern sport diver. The folks at Wenoka have issued a truly stunning commemorative knife honoring those original Navy Frogmen and the events of June 6, 1944. The knife itself is a painstaking recreation of the original knife carried by the UDT teams in World War II. There are some differences, of course—the commemorative version is 24k gold plated and etched with a commemorative legend. It also comes in a cloth lined, walnut finished, wooden display case. It has a gold stamped leather sheath just like the original.

The UDT Commemorative is the third in a series of knives being crafted by Wenoka to link some of the important events in the history of diving and help us remember how our sport evolved. The first commemorative recalled the invention of scuba in 1942 and the second paid tribute to the deepsea diver.

The history of the UDT is fascinating and the more I dug into it the more interesting it got. I don't have room here to write a book, because that's what it would take, but I would like to describe the basic story for you.

The need for some type of combat unit operating in water became acutely apparent to U.S. military men on November 20, 1942. On that day, during the am-

phibious invasion of the Japanese-held island of Tarawa, tragedy struck. A submerged reef caused the Marine-laden landing craft to stop far offshore, forcing the troops to wade several hundred yards to the beach. To the heavily equipped invaders, submerged depressions and holes became as lethal as enemy bullets and hundreds drowned.

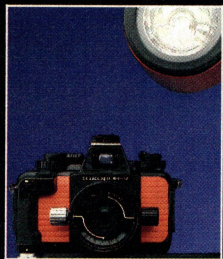
To provide better pre-assault hydrographic information and to demolish beach obstacles, Navy Combat Demolition Units were formed. (The official name did not change to Underwater Demolition Teams (UDT) until later in the war.)

The first Navy Combat Demolition Unit personnel were gathered from Navy construction battalions and Navy/Marine scout and raider volunteers. All were in rugged physical condition and had previous swimming experience. They were assembled at Fort Pierce, Florida, in the early summer of 1943 to begin an intensive physical training program. This program was based on the theory that a man is actually capable of 10 times the physical output normally required of him.

Demolition work was naturally emphasized and specialized methods were developed for those types of obstacles which might be encountered on beach invasions. Grueling day and night exercises conducted in the snake and alligator infested swamps of Florida eventually

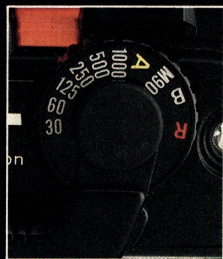
(Continued on Page 118)

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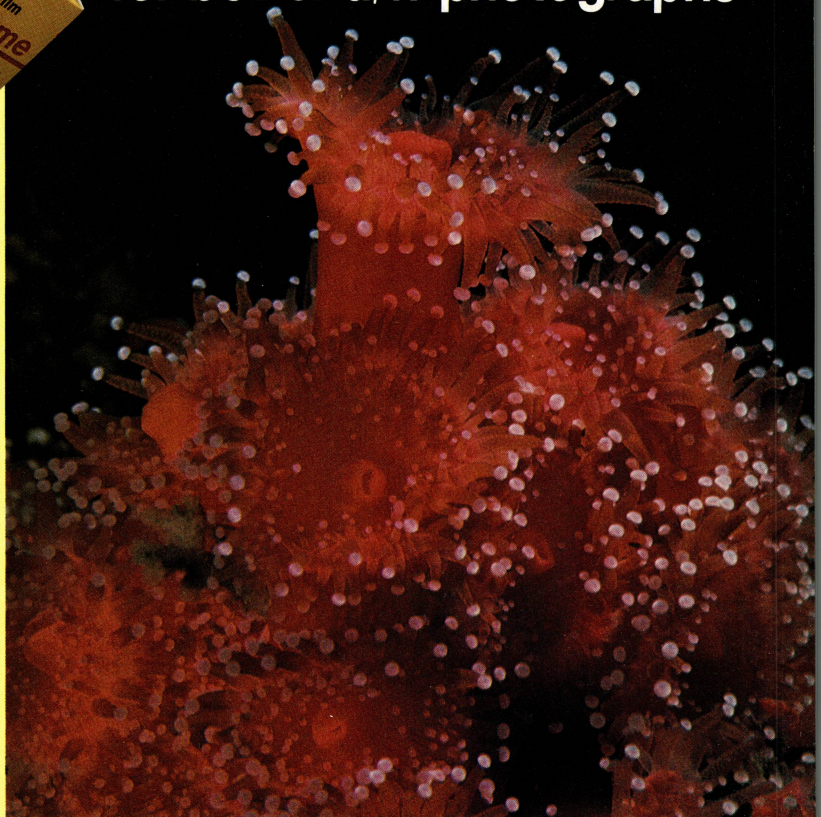
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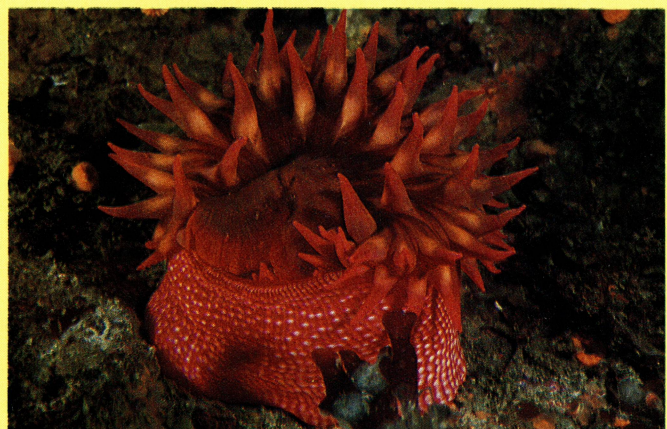
Kodachrome 25



Kodachrome 64



Kodachrome 64



Kodachrome 25

TEXT AND PHOTOGRAPHY BY JIM AND CATHY CHURCH

For years, Kodachrome 25 and 64 have been the favorite films of many U/W photographers because they provide fine-grain sharpness and warm skin tones in diver portraits. But, as with any film, color balance and film speed can vary from batch to batch and with age and storage conditions. Therefore, to provide more consistent results for serious amateurs and professionals, Kodak has introduced professional versions of the Kodachromes.

The regular Kodachromes (called amateur or consumer films) are for photographers who buy a few rolls at a time, take

a week or more to finish a roll, and then have it processed a week or two later. The new professional films, however, are for photographers who finish one or more rolls a day, have it processed immediately and insist on consistent results.

THE SAME, BUT DIFFERENT

To understand how the amateur and professional films differ, let's start with their similarities: The color quality, sharpness, grain structure and stability of amateur and professional films are identical. However, color balance changes with time. Thus,

expiration dates are printed on the boxes.

Because there is a time lag between when the film is manufactured and when it is used, an allowance must be made for the expected changes that will occur. As Kodak explains, "... if a given film shifts toward yellow-green as it ages, it will be manufactured with its color balance shifted in the opposite direction (toward blue-magenta) to compensate." In other words, the color balance starts shifting the day the film leaves the factory and continues shifting until it is exposed and processed. Thus, Kodak estimates the time interval between production and use and manufactures the film with an allowance for aging at room temperature. The goal is optimum color balance at the time the film is used.

But what if the film has been stored at temperatures above or below normal room temperature? Higher temperatures accelerate the aging process; lower temperatures slow it. Therefore, because both time and temperature affect color balance, two rolls of film, with identical expiration dates, but which were stored at different temperatures, could have different color characteristics. While many amateur photographers may never notice subtle color differences in their Kodachrome slides, serious amateurs and professionals want consistent results.

Kodachrome Professional 64 and 25 don't have a built-in color bias. Rather, these films are near the best possible color balance at the time of shipment from the factory. Upon receiving the film, the dealer stores it at 55°F or lower to keep the chemical composition stable. Ideally, the photographer who purchases the film also refrigerates it. Then, after a warm-up period of a few hours or overnight, the film is exposed and processed as soon as possible. The resulting slides will have the most consistent color balance Kodak can provide.

The rated film speed is another important difference between amateur and professional films. The nominal film speeds of amateur Kodachromes—ISO 64 and 25—represent the midpoint of the allowable film speed variation. The actual film speeds, from one emulsion number to another (the particular batch of film), can vary by plus or minus one-third stop. Thus, the actual film speed of Kodachrome 64 amateur film can vary from ISO 50 to ISO 80. Likewise, the actual film speed of Kodachrome 25 amateur film can vary from ISO 20 to ISO 32. While many photographers might not notice a one-third stop difference in their slides, they would probably notice a two-thirds stop difference. For an extreme example of a two-thirds stop difference, suppose you established exposure settings by trial and error with Kodachrome 64 that had an actual film speed of ISO 50. Later, using film from another batch with an actual film speed of ISO 80,

you would overexpose the shots by two-thirds of a stop.

The Professional Kodachromes, however, will be within one-sixth stop of the rated ISO film speed. (Note: The instructions packaged with Professional Ektachromes indicate the effective film speed within one-sixth stop. Professional Ektachrome 64, for example, may be rated at ISO 50, 64 or 80 and Professional Ektachrome 200 may be rated at ISO 160, 200 or 250.)

WHICH KODACHROME?

Kodachrome 64 Professional film is a medium-speed, fine-grain, general-purpose film that can be used for either close-up or wide angle U/W photography. Kodachrome 25 Professional film is a slow speed, virtually grainless film that is usually used for U/W close-ups with strong strobe lighting. If maximum sharpness is your goal, and you don't require maximum depth of field, a close-up exposure on Kodachrome 25 Professional at f16 will have greater sharpness and less grain than a close-up exposure on Kodachrome 64 Professional at f22. (Not only is ISO 25 less grainy than ISO 64, but lenses for 35 mm cameras usually produce sharper images at f16 than at f22.)

KODACHROME VS. EKTACHROME

Kodachrome 64 definitely records sharper images than Ektachrome 64, and Kodachrome 25 images are even sharper. This is an especially valuable characteristic if you wish to make larger color prints and wall murals from your slides.

When exposed with automatic strobes that use extremely brief flash durations for close-ups, Kodachrome may require less compensation for reciprocity. For example, at 1/10,000 second, Ektachrome films require an additional half stop of exposure, Kodachrome films don't.

When compared to the Ektachromes, Kodachrome professional films do have some disadvantages: While you can process Ektachrome in the field and many resorts have Ektachrome processing, Kodachrome processing is much more complex. You must send the film to a lab for processing. In remote areas, it could be two weeks or more before you see your processed film.

Some "disadvantages" are a matter of taste. Differences in midwater background colors, for example, may not be obvious until you compare projected Kodachrome and Ektachrome slides side by side. While the Kodachromes are sharper and often brighter in the near subject areas, Ektachrome 64 produces bright, cool blue-water backgrounds. Kodachrome, in our opinion, produces weak, purplish blue-water backgrounds. Cathy loves the cooler Ektachrome colors, even in close-ups, especially the yellows and blues. But for purple creatures, she loads with Kodachrome every time.

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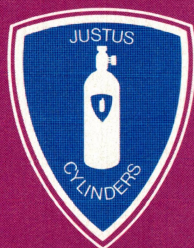
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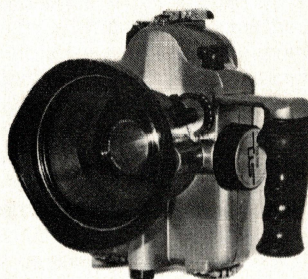
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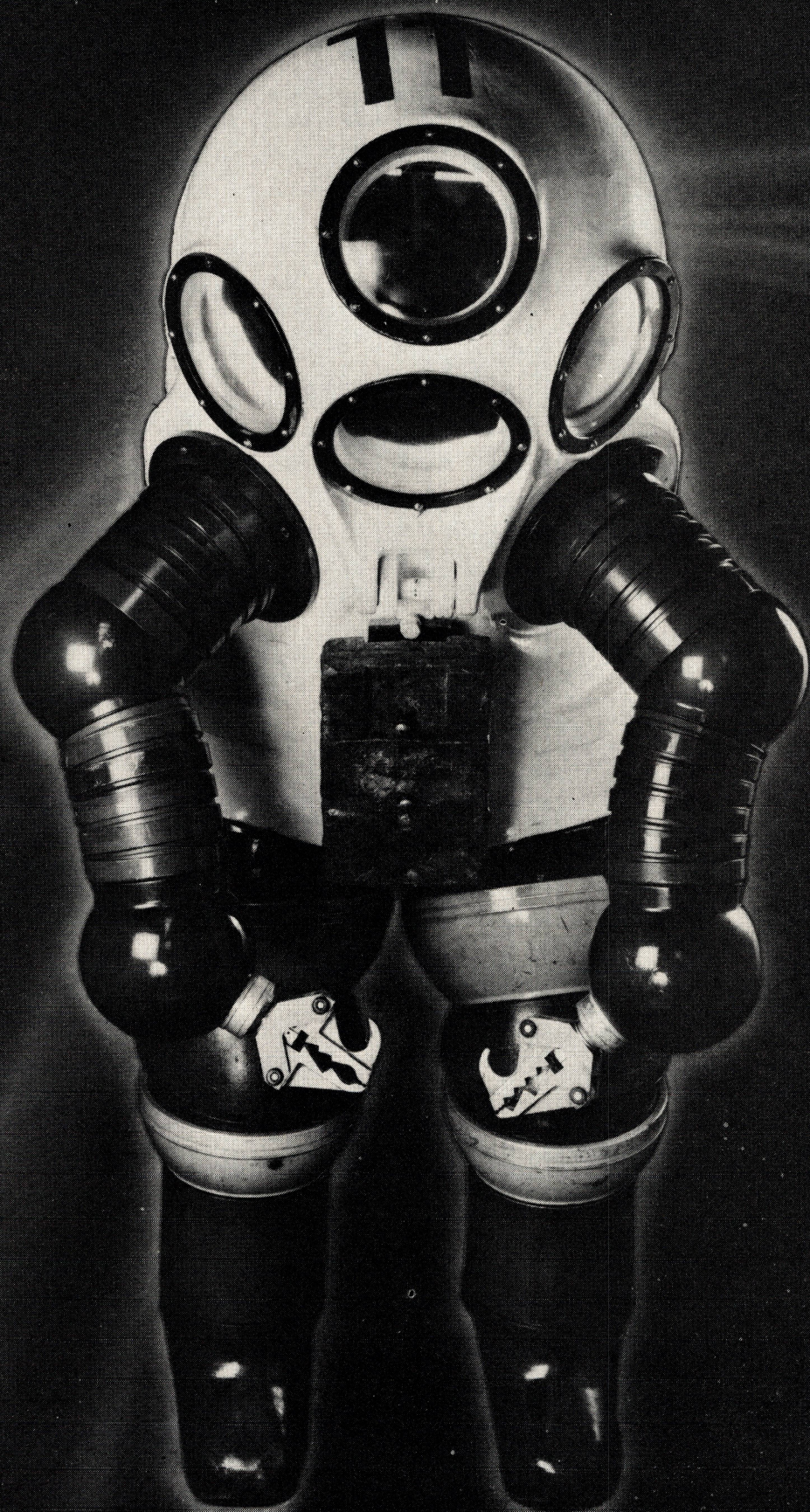
USING PROFESSIONAL FILM

Once you have decided to use professional films—either Kodachrome or Ektachrome—there are certain precautions you should follow, beginning at the time of purchase. When buying several rolls, make sure that they all have the same emulsion number to minimize any differences between them.

Because the professional film may be out of sight in a refrigerator, you may have to ask if it is available. Don't buy professional film displayed in a dealer's showcase at room temperature. If stored at identical temperatures, both amateur and professional films age at the same rate. Therefore, the unrefrigerated professional film is no longer professional—it has become amateur film.

While you should keep the film refrigerated, storage at room temperature for a couple weeks time won't noticeably change color balance. In Kodak's words, "Typically, a roll of professional color film will be exposed within a week of being removed from refrigerated storage and processed within the next week." If you decide not to use thawed film, return it unopened to refrigerated storage. And, if you are unable to have film processed for a couple weeks, put the cassettes back inside the plastic containers and refrigerate them. In hot climates, where you may be in vehicles or boats that are exposed to hot sunlight, keep your film wrapped and in the shade or keep it in a cooler.

How can you tell if a film is professional or amateur? Easy. Professional films have the word Professional on the package. If that word isn't there, it's amateur film. And, the box and cassette are marked PKR for Professional Kodachrome 64, and PKM for Professional Kodachrome 25. The designation DX on the box and cassette means that the cassette and film have electronically readable codes for future "smart" cameras and processing equipment, as will all Kodak films eventually. A 36 exposure cassette of Professional Kodachrome 64 or 25 retails for \$7.25 as compared to \$6.59 for the amateur versions. For more information, contact; Eastman Kodak Co., 343 State St., Rochester, NY 14650.

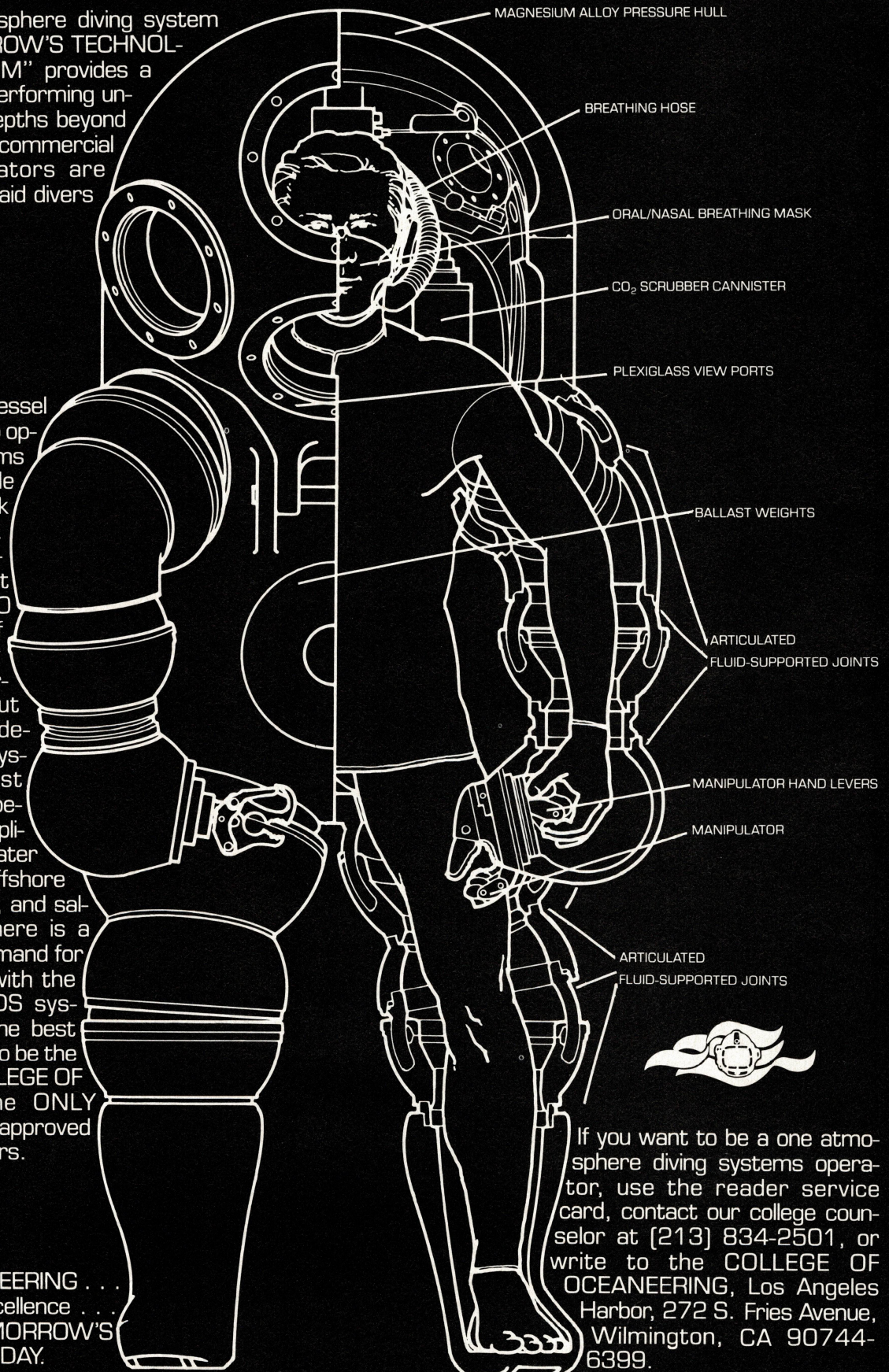


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CLOSE-'N-WIDE OPTICAL GROUP

A Unique 3-in-1 U/W Macro Lens System

TEXT AND PHOTOGRAPHY BY GERI MURPHY

Macro is one of the beautiful and rewarding forms of underwater photography, but it can be limiting at times. Using a macro extension tube between the camera and lens shortens the focal length and picture area for the duration of the dive. When macro photo buffs get together to swap tales about "the one that got away," it is usually a sad story about being in the right place with the wrong macro tube and framer.

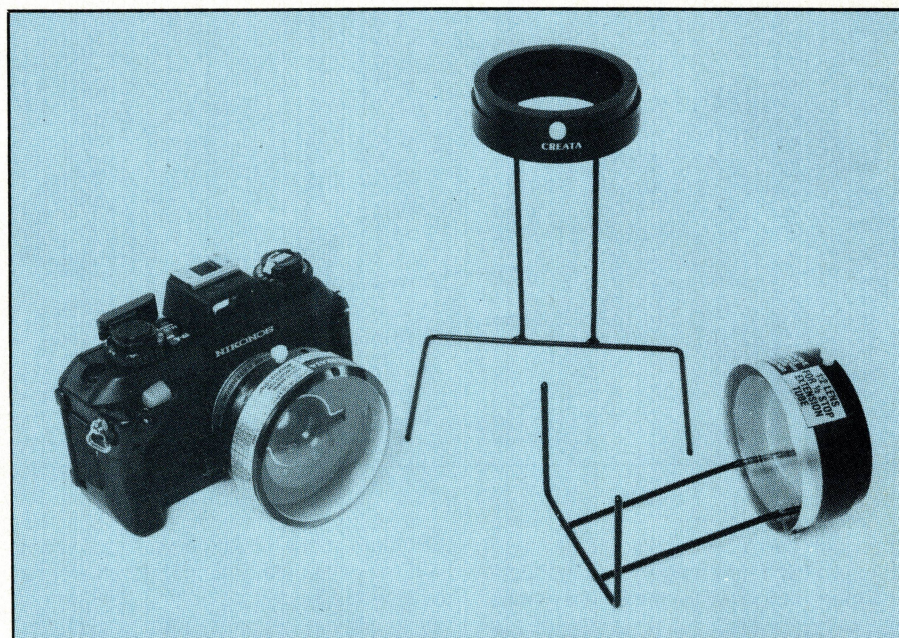
But now there is a solution to this old problem. Creative Whale of West Chicago has just introduced a clever macro system which allows tremendous flexibility underwater.

The new Close-'n-Wide Optical Group is a three in one system which can be switched underwater in seconds and allows the photographer to use either a 1:3 or a 1:2 macro framer, or use 28 mm macro wide angle at a focus range from 8.5-40 inches.

This is an excellent starter system for the beginning underwater photographer, as it will fit most basic macro needs for a very economical investment. The Close-'n-Wide Group works perfectly with the standard Nikonos 35 mm lens and the entire system costs significantly less than individual macro extension tubes and wire framers.

The Close-'n-Wide Optical Group consists of four basic components that work together as a multi-range macro system. The heart of the system is a black anodized aluminum extension tube which fits between the Nikonos 35 mm lens and the camera body. It can be used with any Nikonos, even the new V.

This extension tube is called a 1/2 Stop Extension Tube but it is actually the same as a 1:3 extension tube used in other macro systems. The only difference is the lack of screw mounts for the wire framers. This is because the framers are at-



The Close-'n-Wide Optical Group is a three in one system which works with the Nikonos 35 mm lens to allow the photographer to use either 1:3 or 1:2 macro, or 28 mm wide angle close-up setups. The components can be changed quickly underwater and thus allow the photographer tremendous flexibility in choosing a subject.

tached to the lens in a different manner.

The 1/2 Stop Extension Tube is a key component to the entire Close-'n-Wide Group and is used in combination with each of the macro accessories. It is called a 1/2 Stop Tube because it diminishes the incoming light by approximately one-half of an f stop.

The three different macro accessories of the Close-'n-Wide Group are designed to slip over the front of the Nikonos 35 mm lens. The lens rings are made of machined plexiglass tubing which has been painted black. An adjustable white nylon

set screw helps to hold the rings in place. The user should not tighten this screw with too much force because the rings are designed to slip on and off the lens while underwater.

The 1:3 macro accessory consists of a simple lens ring and 1:3 wire frame which extends out from the lens seven inches. It is the larger of the two wire framers and allows the user to photograph macro critters up to five inches in length. The 1:3 ratio indicates the size of the image on the film will be one-third actual life size.

The 1:2 macro accessory is quite

unique. It is a combination of the extension tube and a magnifier lens which is fitted in front of the Nikonos 35 mm lens. The magnifier is high grade optical plexiglass with a curved surface on the inside. The image it captures on film is one-half the actual size of the creature. With this accessory the user can photograph creatures up to three inches long.

The third accessory in the Close-'n-Wide trio is a wide angle close-up auxiliary lens, also made of high grade optical plexiglass. This has a flat surface on the inside and a curved dome element on the outside. It turns the standard Nikonos 35 mm lens into a wide angle 28 mm lens with a 59 degree angle of coverage. The extension tube turns this wide angle auxiliary lens into a wide angle close-up sys-

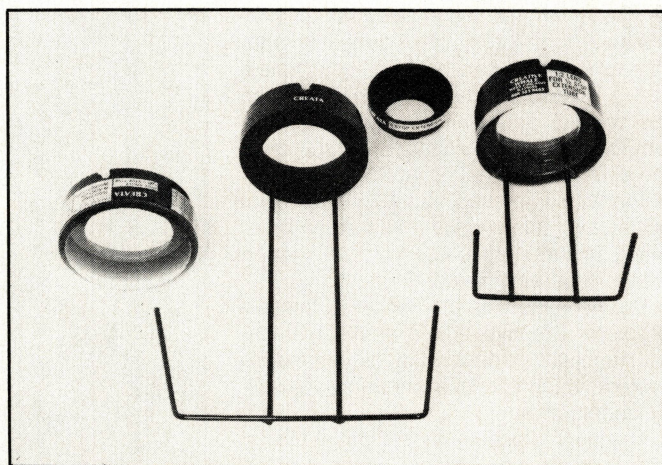
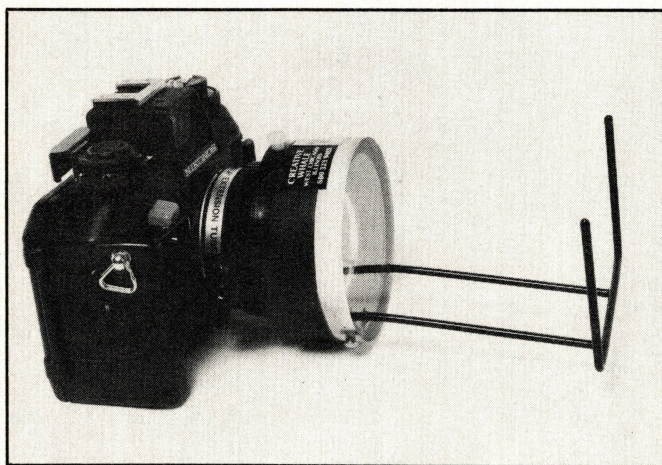
tem hermit crabs and so on. Exposure settings and strobe distances are the same for the 1:2 macro accessory as for the 1:3 macro framer. This is because the flash exposure is dependent on the 1/2 Stop Extension Tube which is used for both setups. Depth of field for the 1:2 macro setup is approximately three-eighths inch.

We found the wide angle close-up accessory to be especially useful for photographing medium sized sponges, scorpionfish, moray eels, octopus, coral reef fish and other fairly large sized creatures. At minimum distance you can focus on creatures 8.5 inches away, provided you are using the f22 aperture setting. This would mean bringing the strobe in very close—to approximately ten inches. At

Another minor problem with the macro accessories is that they occasionally slip off if the wire framer is bumped or jostled. The user must take care in handling the wire framers and check frequently to make sure the rings are firmly seated.

The big winner in the Close-'n-Wide trio is the wide angle close-up auxiliary lens. This allows you to do things that are just not possible with other Nikonos lenses. You can shoot large creatures at very close range and obtain surprisingly sharp images. The trick to this lens is to hold the strobe in close and operate at lens apertures of f16 and f22.

The best news is the price. The entire Close-'n-Wide Optical Groups sells for \$129.95. That's a lot of lens capability for the money.



tem which can focus on images from 8.5 inches at minimum range to 40 inches at maximum range. With this auxiliary lens, the user can focus at a variety of distances and a special scale can be found on the barrel of the lens. The user can photograph creatures measuring from five inches to three feet in length.

In testing the Close-'n-Wide Group, SDM found the 1:3 basic macro accessory to be ideally suited for fairly large macro critters such as crinoids, large arrow-crabs, small sponges, anemones and large bristleworms. Using Ektachrome 64 film, you can set the lens aperture at f22 and hold the strobe approximately ten inches from the subject for perfect exposures every time. Of course, the distance is dependent upon the power of the specific strobe used. The depth of field at f22 is approximately three-fourths of an inch to one inch.

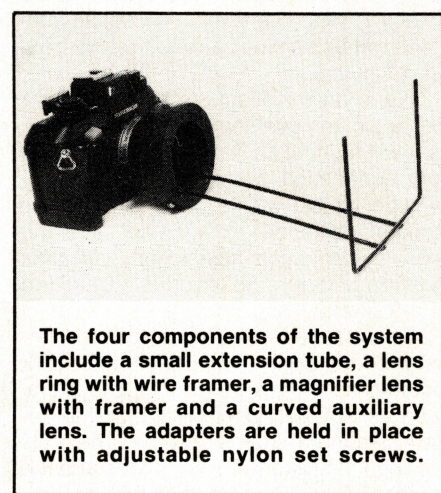
We found the 1:2 macro accessory to be ideally suited for smaller creatures such as banded coral shrimp, Christmas tree worms, flamingo tongue shells, small

maximum focus distance you can shoot pictures of people or fish 15 to 26 inches away with an aperture setting of f8. In order to achieve accurate framing with the wide angle lens, you need to use a 28 mm optical viewfinder. The built-in viewfinder on the Nikonos can be used in a pinch, but it is not quite as convenient.

The ability to switch from 1:2 to 1:3 macro U/W is definitely a big advantage. This feature alone would make the Close-'n-Wide Group highly desirable.

The single size extension tube is a subtle, but equally important advantage. It eliminates the need for changing strobe distances for exposure compensation and thus cuts down on the possibility of exposure error.

Perhaps the biggest problem with the Close-'n-Wide Group is figuring out how to carry all of the components underwater. There are three different lens rings and two of them have bulky, awkward wire framers attached. Creative Whale is hoping to solve this dilemma by designing an underwater lens pouch or holster.

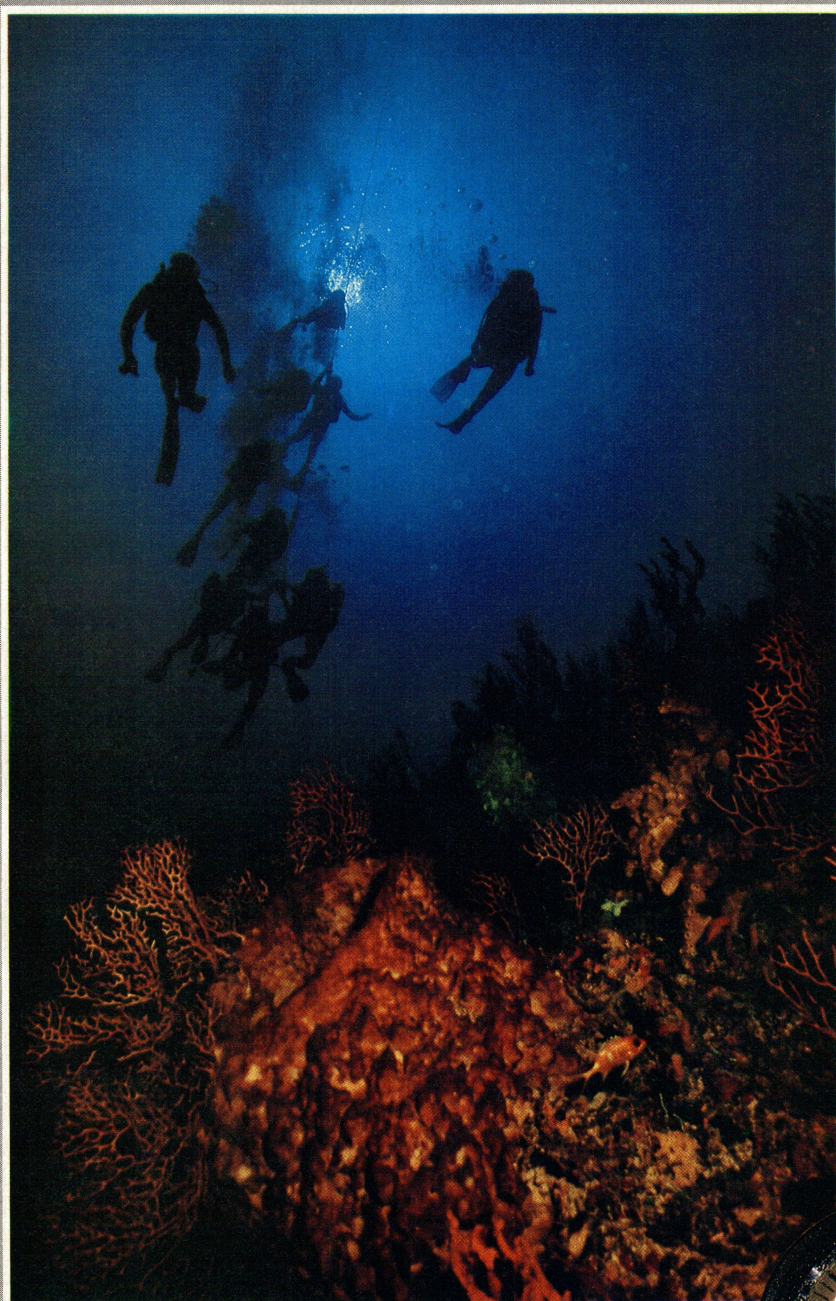


The four components of the system include a small extension tube, a lens ring with wire framer, a magnifier lens with framer and a curved auxiliary lens. The adapters are held in place with adjustable nylon set screws.

For more information contact: The Creative Whale, 940 E. Roosevelt Rd., West Chicago, IL 60185. The U.S. toll free number is (800) 323-9483. In Illinois you can call (312) 231-3301.

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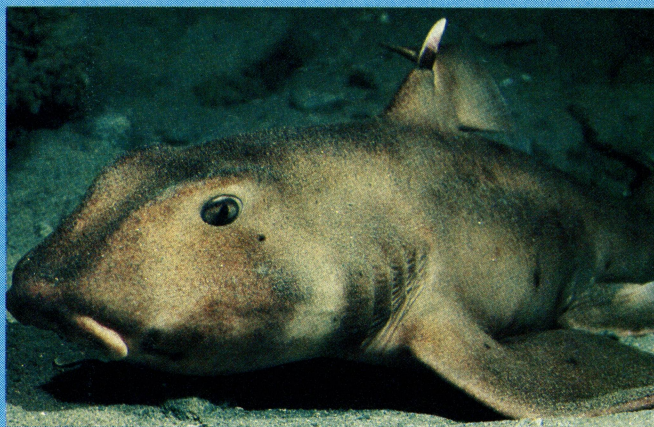
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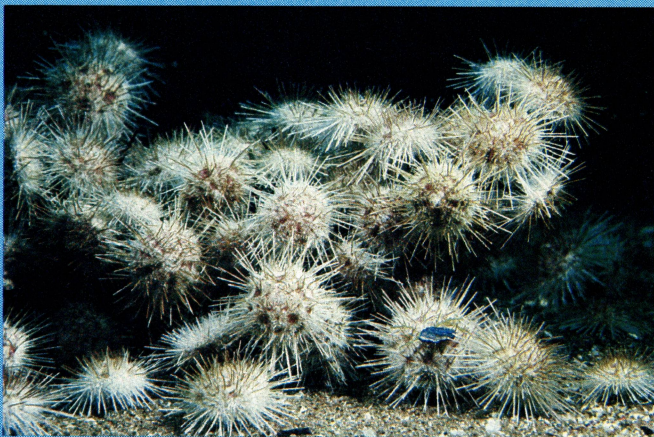
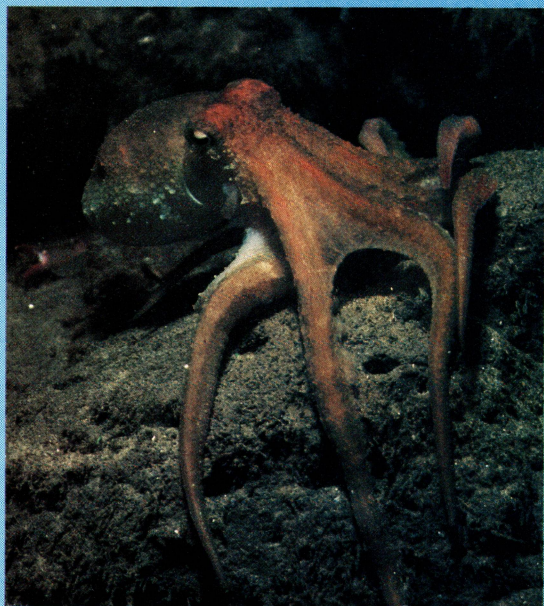
Seapens emerge from the sand at night.



A mild mannered horn shark poses for the photographer.



Tube anemones are dramatic photo subjects.



A gathering of white sea urchins.
An octopus heads for its den.

**TEXT AND PHOTOGRAPHY
BY MARTY SNYDERMAN**

During daylight hours the southern sector of the La Jolla submarine canyon off the coast of San Diego, CA is perhaps the least interesting dive in the entire Pacific, possibly the world. Admittedly, I've never dived the bauxite pits hoping to discover a '57 Chevy or a buffalo skull, but I am certain those dives would offer at least double the adventure of starting across the sandy bottom at La Jolla Shores. For years San Diego's dive instructors have taught their open water work here because there are almost no distractions to keep students from giving their undivided attention to the instructor in charge. No distractions means no fish, no kelp, no gorgonians, no whale sharks, no lobster, no dolphins, no octopus—nothing but sand and green water. I will concede that once or twice a year a gray whale swims through a mask clearing class, but other than that, the shores and canyon are San Diego's most boring daytime dives.

It is equally true that once the sun sets and nocturnal creatures emerge, diving the canyon is fascinating. The previously barren sand comes alive with a variety of marine creatures. I mean the joint is jumpin'! On any given night you are just about guaranteed an encounter with at least one octopus, several turbot, a variety of rockfish, a ray or two and a whole host of interesting sea life. Almost everywhere you look there is at least one pair of eyes staring back at you.

The La Jolla submarine canyon is part of a deep marine trench that parallels the Southern California coastline. In some areas this lies several miles offshore but in La Jolla the edge is only a few hundred yards off the beach. While the top of the south canyon walls are only 40 feet or so down, the canyon plummets to 600-800 feet and in some places, to several thousand feet.

Standing on the beach at the shores just prior to a night dive is an exhilarating experience. Between Scripps Institute of Oceanography and famous La Jolla Cove, a diver can turn to the south and peer directly into the bright lights of the La Jolla bar scene. Looking due west a diver faces only a short swim to the deep, dark canyon.

Moving away from the beach the sandy bottom slopes gently to about 40 feet approximately 200 yards offshore, depending upon the tide. At that point a series of short, steep ledges cascade rapidly downward. It is the life along these sand and clay ledges that divers usually find to be so diverse and alluring.

Experienced canyon divers use landmarks to drop in on the canyon's top lip after a surface swim that conserves air, but beware, if you drop in past the top wall there is just no telling how deep you will drop before you reach the bottom. Some nights I'm afraid the bottom just doesn't exist.

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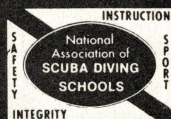
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LA JOLLA CANYON

Water temperatures in the canyon vary considerably. At depth severe thermoclines are the rule, not the exception. It is not uncommon to enjoy a summertime surface temperature of 68°F and be confronted with chilly mid-40s at 50 or 60 feet, though the mid-50s is more often the case. Visibility varies with temperature changes as well. On the surface it is usually 15 feet or so, but in the colder, deeper waters 40 to 50 feet is quite common. The marked temperature variations often mean noted demarkations in marine life along the ledges.

Life in the canyon is vastly different from that found in nearby kelp forests. The canyon attracts inhabitants best suited for survival on sand flats and in the ever changing clay crevices.

Just beyond the surf line on most nights you become immediately aware of the presence of hordes of dinoflagellates. Their bioluminescent quality causes anything that moves, including you and your diving buddy, to be outlined by a brilliant green glow. The sandy bottom, too, is alive with a diverse variety of sea life. Guitartfish scurry along the sand as lights approach. Flatfish (sole, turbot and halibut) camouflage themselves in the sand. These creatures usually bury themselves so that all you can see is a pair of eyeballs and a vague outline.

Filter-feeding seapens and sea pansies also emerge from the sand. The feathery looking seapens vary in size from only a couple of inches to over a foot in height. These and the sea pansies glow in a bioluminescent outline as you disturb the water around them.

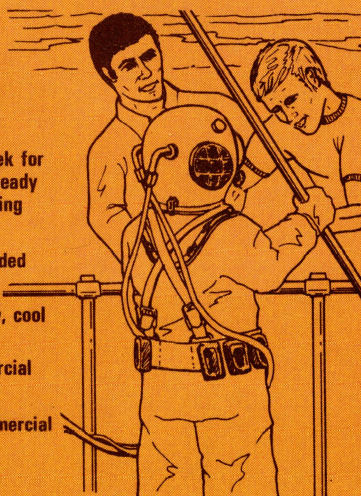
As a diver approaches the lip of the canyon, there is an excellent chance of seeing at least one octopus. The species that inhabits the canyon are usually quite small, only about 8-10 inches across the tentacles, but they are some of the sea's most fascinating residents. Nocturnal animals, octopi prefer to feed upon small mollusks and crustaceans. Often a mottled brown that matches the sandy bottom, the canyon octopi can change color within a fraction of a second. These tiny mollusks are such masters of camouflage that I have often lost sight of one that didn't move, but merely changed colors.

Some nights the top ledge of the canyon is frequented by angel and horn sharks. Angel sharks look more like a ray than a shark and horn sharks look a great deal more like catfish than *Jaws*. Scientifically speaking, both possess the characteristics found in sharks and are classified as such. These species utilize pavement-like teeth to crush the small mollusks and crustaceans they feed upon.

Cusk eels, too, are a treat from the top ledge. Rarely seen in the daytime, these

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LA JOLLA CANYON

are only about 10 inches long. Light brown in color, cusk eels have barbels. They tend to face away from a diver's light, making them difficult photographic subjects.

Descending down the vertical walls is always a thrill. Peering from numerous crevices are creatures that vary from bright red rockfish to enormous sheep crabs. Bryozoans cover the top ledges. Tiny crabs and tube anemones are clustered among them.

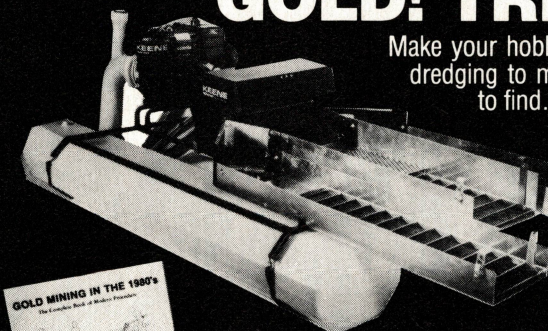
It is very common to discover a radical difference in both water temperatures and marine life from one ledge to the next. Along one ridge a diver might find several cabezon resting on the bottom. The next is covered by numerous sculpin and perhaps a species of shrimp. Returning to the same spot the following evening you'll see lots of rockfish, a score of sarcastic fringehead and plenty of lingcod, but almost none of the creatures seen the evening before.

Swimming back to shore along the bottom is always fun. At the end of a night dive your eyes and thought processes are usually better at picking out the sea life. Almost everywhere you look you will see a pair of eyes shimmering in the night as they are struck by the beam of your light. Often the eyes belong to a shrimp that quickly buries itself in the sand as you get near. Other times the eyes belong to a small sculpin or other fish that is merely resting on the sand. And, once in a great while the eyes are attached to a large black sea bass, sea lion or bat ray. Always, it is a thrill to see the shimmer of reflected light and then approach, not knowing what creature of the night you have stumbled upon.

Surfacing after a night dive in the canyon, I almost always stop and stare into the bright lights of La Jolla. It seems strange to me to be so close to the nightclub life of Southern California, perhaps the ultimate in artificially created situations, and yet at the same time to be in the middle of a frontier where wildlife abounds. In the bars I know people are reaffirming their belief that Southern California is "the place to be." I totally agree, but I just wonder if we are talking about the same place. Personally speaking, I'll take a night dive in the La Jolla submarine canyon anytime.

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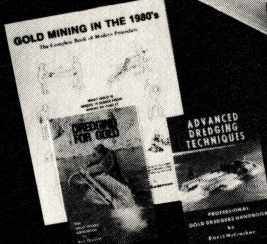
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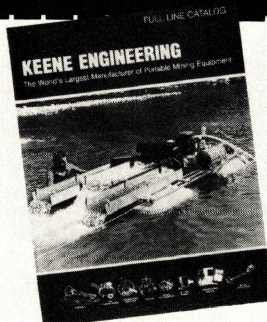
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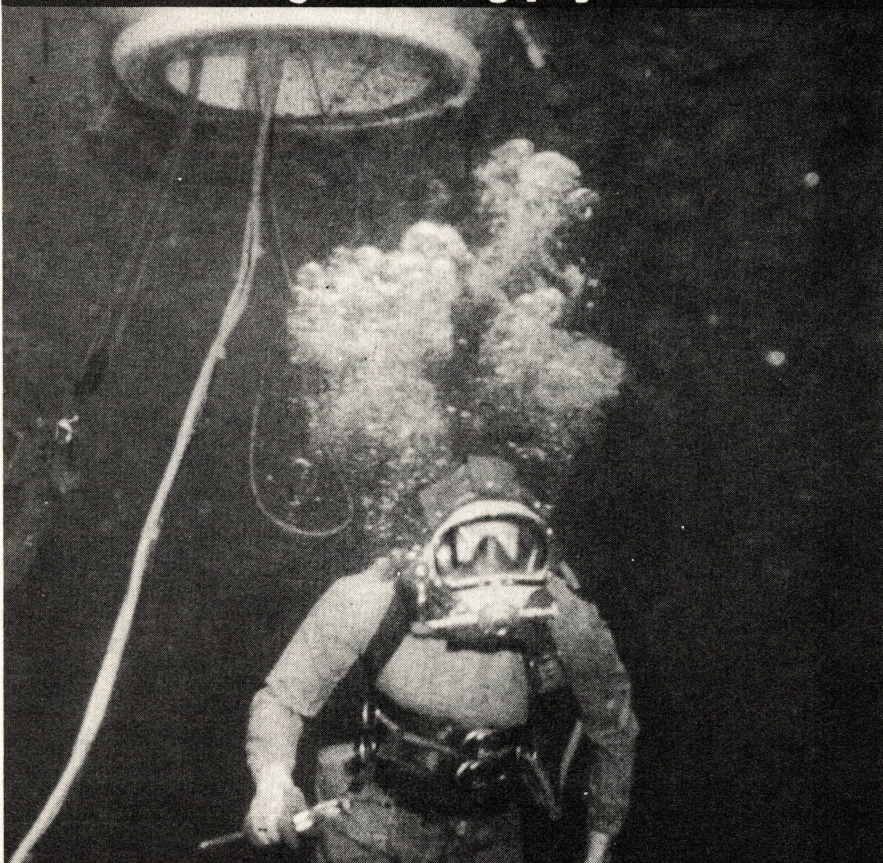
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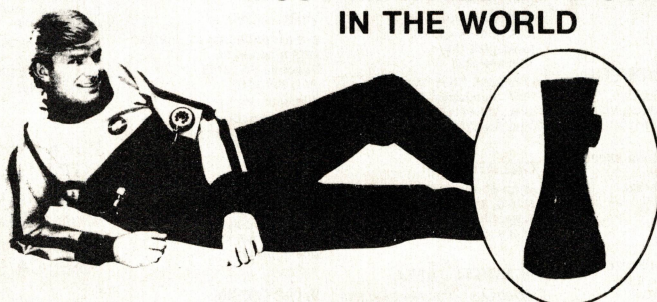
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


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Film Festivals 'n Symposiums


SEAFEST '84

SeaFest '84, an underwater exposition to benefit the Palm Beach Science Museum and Planetarium, will be held July 13-15 at the PGA Sheraton Resort in Palm Beach Gardens, Florida. The event will feature underwater films by Norine Rouse, an underwater photography contest in amateur and professional classes, treasure hunts, marine and dive equipment displays and more.

For information and a weekend package contact Granville Wood, PGA Sheraton Resort, 400 Avenue of the Champions, Palm Beach Gardens, FL 33410; (305) 627-2000. 

UK APPOINTMENTS


Underwater Kinetics, manufacturer of lighting products and dive accessories, recently appointed Roddy Winton, David Morgan, Danny Faas and Renny Koseff as independent sales representatives for the company. All have been active in the dive business for many years. Winton works the Pacific Northwest region, Morgan covers the entire Caribbean area, Faas travels throughout Texas and the surrounding states and Koseff, based in New Jersey, handles accounts in the mid-Atlantic region.

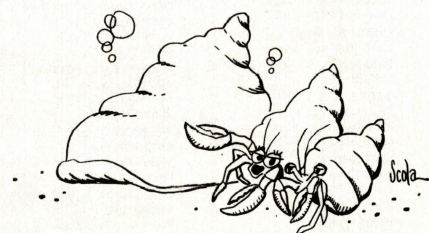
Additionally, Dan Walsh, also active in the industry for many years, now handles marketing duties for Underwater Kinetics, assisting director of marketing Ron Grimes. 

INTERNATIONAL FILM FESTIVAL

The International Underwater Film Festival, sponsored by Eastman Kodak Company, Rochester and Kodak SA, Lausanne will be held October 13-14 at Kongresshaus Luzern, Switzerland. Award winning films from filmmakers such as Ron and Valerie Taylor, Hans Hass and Krov Menuhin will be presented.

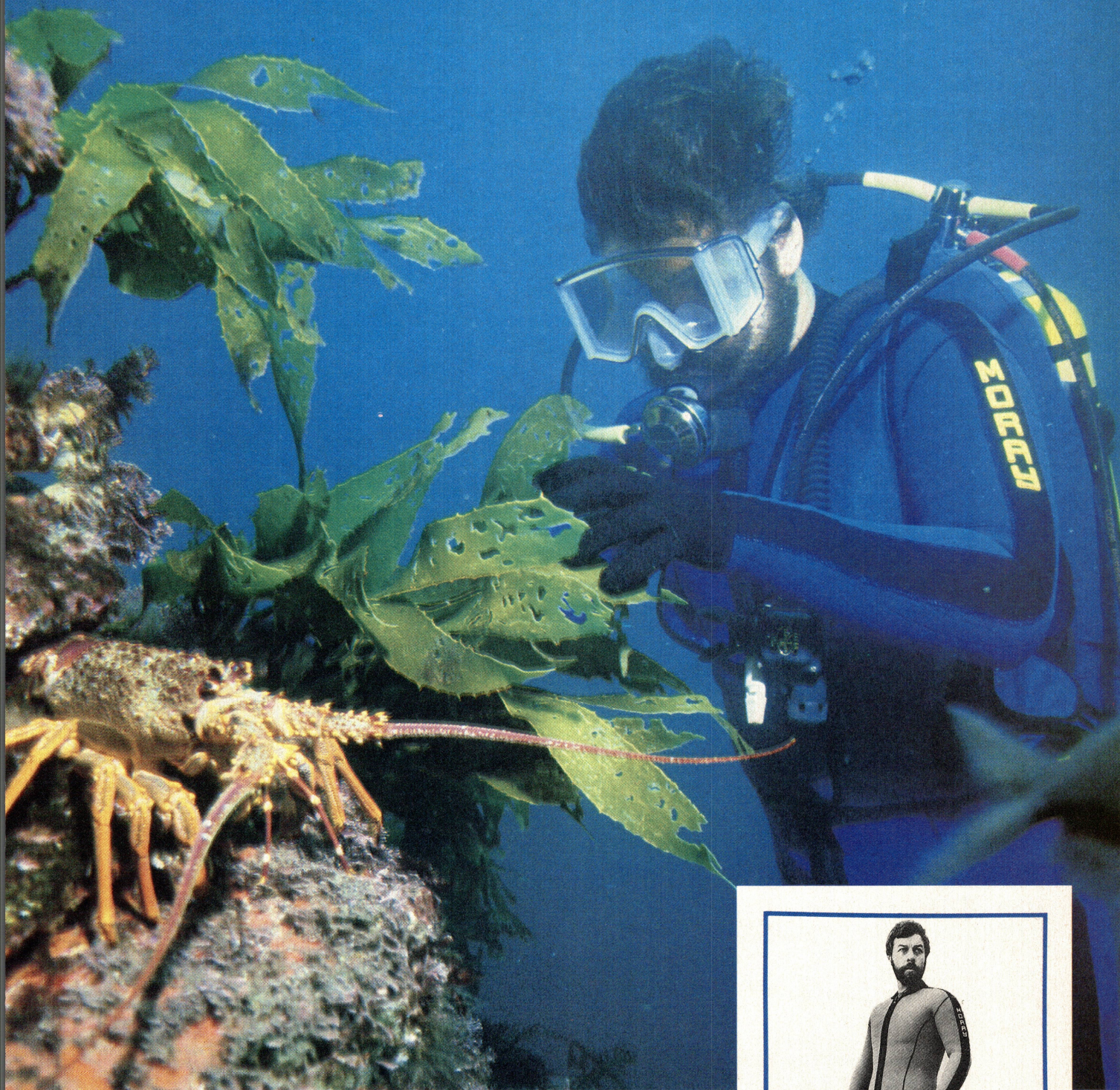
Parallel to the festival, the International Commission for Scientific Research of the Mediterranean will be holding a congress under the guidance of Prince Rainier III of Monaco.

For information contact: Film Festival 84, Postfach 196, CH-8029, Zurich, Switzerland. 



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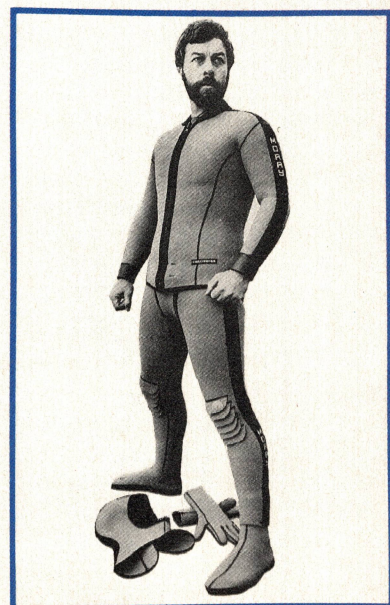
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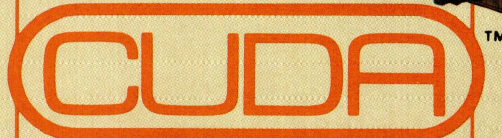
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Tekna Mask III

TEXT AND PHOTOGRAPHY BY GERI MURPHY

I can still remember the day I first saw my dream car. It was a brand new Rolls Royce parked on Rodeo Drive in Beverly Hills. What made this car so special was its color: It was candy apple red. Its deep, rich color with a high gloss finish radiated an elegance I had never seen before.

Seeing the new Tekna Mask III for the first time brought back pleasant memories of that Rolls Royce encounter. Here was a mask that could only be described as pretty but not in a dainty sort of way. This little number had the air of high-tech elegance—the kind you expect to see on a space shuttle or a moon walk.

The Tekna Mask III is the end product of several years of research and development in the field of low volume facemasks. It is the smallest, most lightweight and lowest volume mask Tekna has produced to date. It weighs only seven ounces and fits so close to the face that your eyelashes are likely to brush against the faceplate.

The most important advantage of this mask is that it will fit (according to the manufacturer) over 90 percent of the faces of American divers. This is owing to the surgical grade silicone which is used


in the compression molding process of fabricating the mask skirt. This particular silicone has an ultra-smooth finish and is extremely supple. It will conform to the contours of almost any face. The material is very light in color and almost transparent. You can actually read newsprint through the side of the skirt.

Yet, it is the facemask frame which gives this mask its exceptionally striking appearance. The frame is produced from a molded polycarbonate which has the candy apple color pigment mixed throughout the plastic. An added touch of class is created by the black lens inserts and black strap locks on both sides. The faceplate has two windows fitted with four mm tempered glass lenses.

The mask works as well as it looks. One of the neatest features is the head-strap adjustment design. The high ribbed strap is held securely in place by a spring-loaded lever which operates much like a clothespin. The diver need only to pull on the strap end to snug it against the head. To loosen, press down on the lock and it will release the strap. The strap moves smoothly over a roller and never sticks or jams. But the spring-loaded lever

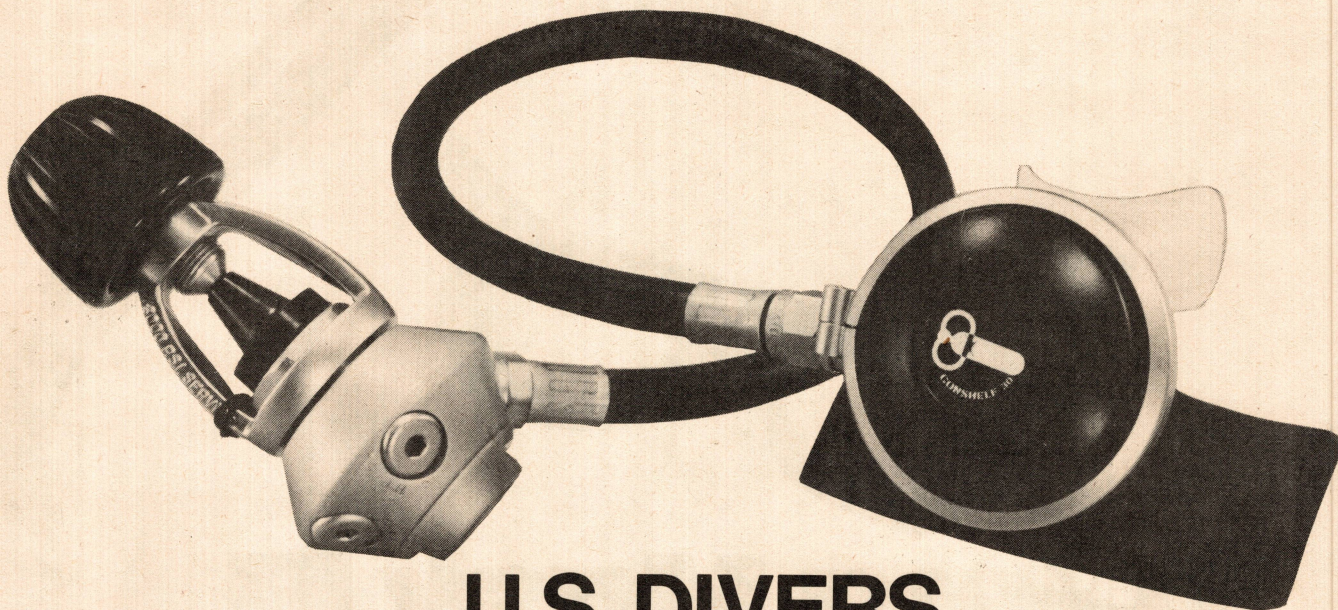
is only half of the design. The other half is a clever little strap keeper. This is divided into two channels, one narrow and one wide. The narrow channel holds the end of the strap securely in place and prevents it from being accidentally pulled off the mask. The wide channel of the keeper allows the inside portion of the strap to slide easily and smoothly through the keeper for quick adjustment. The strap can be adjusted in less than a second while on the diver's head.

With an eye for styling, Tekna has come up with a companion snorkel which is equally attractive and features the same candy apple red throughout the barrel. This snorkel features a contoured big bore barrel of a stiff but flexible elastomer. The mouthpiece is soft silicone and swivels on the barrel. A dual track allows the mouthpiece to be easily turned yet remain firmly fixed to the barrel.

The Tekna Mask III retails for \$44.95 and the snorkel is an additional \$15.95. Both snorkel and mask are available in candy apple red or cobalt blue. For more information stop in at your local dive store or write: Tekna, 1075 Old County Road, Belmont, CA 94002. 

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U.S. DIVERS Conshelf 30

TEXT AND PHOTOGRAPHY BY GEORGE COZENS

The U.S. Divers Conshelf 30 is the most recent addition to a very long line of Conshelf regulators: A series which dates back to the mid-1960s in name and back to the mid-1950s in design. The high model number is indicative of the many changes this series has undergone. The biggest difference between the Conshelf 30 and its closest cousin, the Conshelf XIV, is the first stage. Except for some cosmetic differences, the Conshelf 30 uses, essentially, a Royal Aqu-Lung first stage.

This first stage is based on a balanced diaphragm design—a design that USD believes is less susceptible to friction, wear and the environmental effects of salt, sand and other contaminants, than a piston design. The flexible, fiber reinforced, rubber diaphragm serves as a barrier, keeping saltwater and other matter away from the critical parts of the stage. Under most diving conditions, this design, generally, provides enough protection for the first stage. But for extreme

conditions, such as diving in very cold water, an environmentally protected version, called the Supreme, is available. (Its ambient pressure cavity is filled with silicone oil.) The body of the first stage is quite compact, but heavy. It is machined from solid brass and given a satin chrome finish. Its unique shape allows for reduced size and a 45 degree angling of the high and low pressure ports, which results in less hose kinking and strain at the first stage connections and a straighter path for the air as it flows through the stage. This straighter path, as the air flows through the stage and into the second stage hose, means less resistance and more flow capacity: A capacity USD says exceeds 1,850 liters per minute.

If the high capacity of the first stage is restricted by the low pressure hose and/or connections, the net gain at the second stage is nothing. So, USD provided this first stage with four, gigantic, half inch diameter low pressure ports (compared to three-eighths inch diameter ports

found on typical first stages). Complementing these larger ports is a low pressure hose that has about twice the internal area of other LP hoses: It can handle about twice the flow of air of others. In addition, the greater internal volume of this second stage hose serves as a reservoir, holding about twice the normal amount of intermediate pressure air immediately available to the second stage, without having to turn on the first stage. This results in a lower initial inhalation effort. For attaching low pressure accessories with the more common $\frac{3}{8}$ inch fittings, the Conshelf 30 comes with two one-half to three-eighths inch hose adapters. The single high pressure port is $\frac{7}{16}$ inch in diameter, to prevent anyone from attaching a low pressure hose to it.

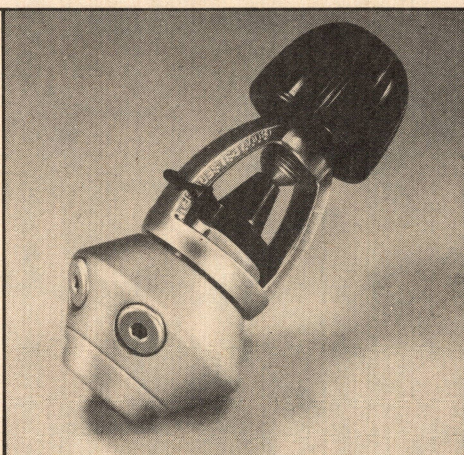
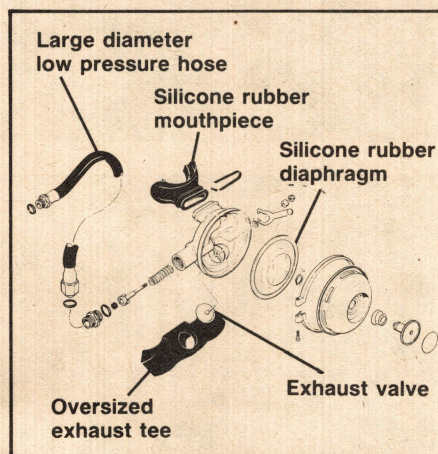
A standard feature on the first stage is the forged brass, satin chrome plated, swivel yoke, rated at 3,000 psi. It is fitted with a large plastic-knobbed yoke screw and an O-ring sealed dust cap.

Except for a few modifications, the sec-

ond stages of the Conshelf 30 and XIV are identical. Both utilize a venturi assisted, downstream demand valve design. The venturi effect created by the flow of air through the second stage helps to reduce the inhalation resistance, and therefore, improve performance. The downstream demand valve, which opens in the direction of flow, and upon demand (i.e., inhalation), acts as a safety valve, venting off any overpressure in the low pressure hose caused by a malfunction in the first

tor after diving, preferably by soaking in warm water with the first stage still attached to a scuba cylinder and with the air turned on. If this method is too difficult, or not possible, a warm water soak is still recommended, but with the dust cap firmly sealed against the HP inlet port. In the latter case, care should be taken not to depress the purge button, as water will likely enter the regulator and cause internal problems. Annual professional service by an authorized Aqua-Lung service

were the inhalations, from slight to normal volumes. At gross inhalations the resistance of the Conshelf 30 increased somewhat: But, it still provided all the air I could use (I couldn't out-breathe it), although it took a little more effort. Returning to the anchor line, I hung off at ten feet for a few minutes. Decompression wasn't required, but it provided additional safety and gave me a chance to experience the Conshelf's performance at shallow depth—still no problems were encoun-



From left: Diagram of Conshelf 30 second stage; first stage; second stage, assembled. The first stage has one 7/16 inch diameter high pressure port and four 1/2 inch diameter low pressure ports. All ports are angled down 45 degrees. The second stage has an oversized exhaust valve and tee, silicone rubber mouthpiece and diaphragm, and a brass case with a polyester powder coat on the front.


stage. The back of the case, called the box bottom, is formed of brass, with a satin chrome plating. The front of the case, called the box top, functions as the diaphragm cover, and is also formed in brass, but with a black polyester powder coat. A clamping ring, of satin chrome plated brass, holds the box bottom and top together and is secured with a stainless steel screw. For improved sensitivity and performance, increased resistance to ozone and chlorine deterioration and greater longevity, silicone rubber is used in the diaphragm, exhaust valve and mouthpiece. The exhaust port and the natural rubber exhaust tee are oversized to reduce exhalation effort. In the center of the box top is the plastic, spring-loaded, flush-mounted purge button. It is of reasonable size and can be easily depressed even while wearing thick gloves.

With its conventional design and corrosion resistant materials, the Conshelf 30 requires no special maintenance. U.S. Divers does suggest cleaning the regula-

tor after diving, preferably by soaking in warm water with the first stage still attached to a scuba cylinder and with the air turned on. If this method is too difficult, or not possible, a warm water soak is still recommended, but with the dust cap firmly sealed against the HP inlet port. In the latter case, care should be taken not to depress the purge button, as water will likely enter the regulator and cause internal problems. Annual professional service by an authorized Aqua-Lung service

dealer is not just recommended, but required to keep the original owner, limited lifetime warranty valid. The cost of this service might run a little over \$20 for replacement parts in a standard overhaul, with, perhaps, a like amount for labor. With my first breath from this new Conshelf 30 I felt this was going to be a pleasant dive. Descending to the bottom, at about 70 feet, I made a quick comparison with the reference regulator. This regulator (one of the same types that made the high performance group in the U.S. Navy Experimental Diving Unit test of scuba regulators in 1979) and the Conshelf 30 were attached to the same cylinder by means of a Y valve. The Conshelf 30 still performed quite well. I then followed a compass course out to sea, until I reached a depth of about 105 feet. Here I made additional evaluations, this time varying my inhalations and exhalations from very slight to much exaggerated. Throughout the range, the exhalations of both were pretty closely matched. So

tered. During two other dives, at depths from 10 to 40 feet, the Conshelf was checked in all of my usual, contorted orientations. It performed well; free of any problems and idiosyncrasies. And, it did not leak any water. Freeflowing was not unusual: If it started, simply tilting the mouthpiece down stopped it. The longish exhaust tee did a good job of directing the exhaust bubbles away from view. A few bubbles did rise within the field of vision, but these disappeared when I looked down slightly. At first, the high ridge on the exhaust tee seemed to tangle with my lower lip. I found, however, that by taking the mouthpiece more deeply into my mouth, the mouthpiece and the tee fit much more comfortably.

All in all, the Conshelf 30 performed very well. This fine performance, in addition to its strong, basic design, solid construction, easy maintenance and reasonable retail price of \$275, should draw the U.S. Divers Conshelf 30 to the attention of many prospective buyers. 

amf mares

One of the Oldest
Becomes One
of the Largest

TEXT AND PHOTOGRAPHY
BY PAUL TZIMOULIS

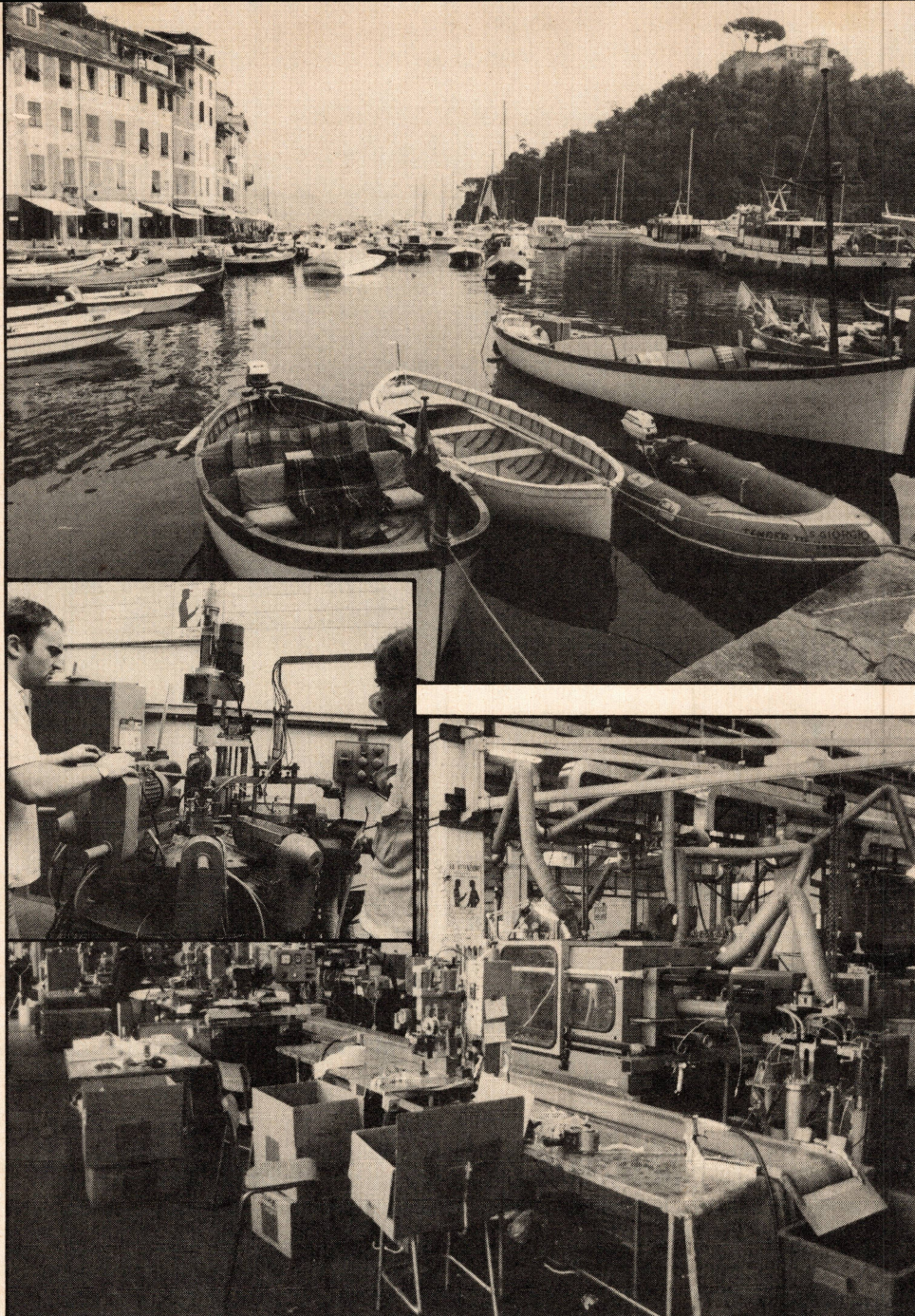
Beginning as a small, little known mask and swim fin company almost 35 years ago, AMF Mares has evolved into the largest European (and number one or two worldwide) manufacturer of diving equipment. It exports products to 80 countries around the world. Annual sales last year reached about 25 billion lira, the equivalent of more than \$17 million.

The AMF Mares factory is in the sea-side city of Rapallo on the northern Italian Riviera. Good diving is found right at the factory's doorstep. The picturesque resort village of Portofino is less than a 20 minute drive. A dive on the underwater bronze statue (the original), Christ of the Abyss, is a short boat ride.

The AMF Mares factory is comprised of two buildings in different parts of town. The older facility is a rambling five story building which is comprised of additions and extensions. This is the manufacturing and engineering facility. Across town is a brand new two story warehouse with more than 6,000 square meters of storage space. The finished goods are stored in this ultra modern facility.

All of the AMF Mares engineers, department managers and key employees are experienced divers who have first hand knowledge of product performance in the water. Most of them go diving two or three times a week—frequently after work. The harbor is only a five minute drive from the factory and it is only a 15 minute boat ride to many good dive sites. Many of the engineers work at Mares because they love to be near the sea for fishing, sailing and diving.

Mares was founded by Lodovico Mares in 1950. He was a hardhat salvage diver in the Austrian Navy in 1919. He came to Rapallo for its pleasant climate and to begin manufacture of this strange new underwater diving equipment. Mares, like his contemporaries Cressi



Above, top to bottom: Portofino Harbor near Rapallo, Italy. Computer operated machinery for the production of the MR-12 III regulator. AMF Mares factory at Rapallo.

and Ferraro, was an early pioneer in diving equipment development.

In 1970 Mares was purchased by AMF, Inc. of White Plains, New York. AMF is a multi-national corporation which has become a prominent leader in leisure time industries. Other well known AMF subsidiaries include Head Skis, Alcott Sailboats, Hatteras Yachts, Voit Basketballs, Ben Hogan Golf Equipment and AMF Bowling Group. Mares continues to be directed by Italian management, but AMF has provided an infusion of capital for the development of new technologies.

The managing director (president) of Mares is Dr. Carlo Bertozzi, a Harvard graduate, who has been with the compa-

ny six years. The marketing director and executive vice president is Augusto Crovetto, who has been with Mares for 25 years. The company's engineering division is headed by Gianni Garofalo, vice president of research and development. He has worked at Mares for 10 years.

Mares employs 304 people, making it one of the most prominent companies in Rapallo. They have a sizable engineering department which designs new items, refines present products and develops their own manufacturing machinery.

Since the advent of AMF, Mares has greatly changed its philosophy. The firm has invested more in research and development resulting in new manufacturing

processes such as the radical liquid silicone rubber injection molding procedure. Many of the company's computer operated robot machines are built in-house, greatly increasing manufacturing efficiency and quality.

The product which brought Mares worldwide prominence was the revolutionary Plana fin, introduced in 1978. It was a major breakthrough in swim fin technology. This new process consisted of thermo-chemical/mechanical bonding of a special high strength plastic blade to a soft and supple thermal plastic foot pocket. Mares, with the help of the AMF Corporate Test Center in Stamford, CT, developed a new type of fiberglass reinforced fin blade called Tecralene, still a secret formula. The space-age blade is resistant to salt corrosion, heat, cold or ozone. It is extremely lightweight yet very strong. The Plana was the first fin with white blades.

an anatomic insert sole which permits better distribution of foot force during high thrust periods. It offers better fit, more comfort and greater power.

The newest engineering marvel to come from Mares is the Power Plana Graphite, made available this year. It is another revolutionary milestone in fin technology, as Mares was the first company to utilize graphite in fin construction. Well known for its strength and resiliency, graphite has been used in the construction of fishing rods, tennis racquets and snow skis. Mares has found a way to successfully blend fiberglass and graphite in its Tecralene material. A shiny gray/black luster makes the Power Plana Graphite fin very distinctive. The new fin has more snap and more resistance than the previous models.

Mares has made great strides in silicone mask design and technology. It was the first to use Liquid Silicone Rubber

tween four or five other companies.

Up until a few years ago, more than 90 percent of Italian diving activity was free diving and spearfishing. Now, it is 65 percent free diving and 35 percent scuba. It is no wonder Mares has such deep roots in free diving equipment technology.

Mares is regarded as a leader in the design and development of pneumatic spearguns. There are 20 different models in their catalog; seven of which are sold in the U.S. The Mares engineers are particularly proud of their new generation rear handle pistol grip pneumatics called Sten Guns.


Mares pneumatics are used by most Italian competitive spearfishermen. The company also sponsors an official Mares team which has won many championships. The best known spearfisherman for Mares is Massimo Scarpati. Considered the top free diver in Italy, he has won the World Spearfishing Championship once, the European Spearfishing Championship twice and the Italian Spearfishing Championship five times.

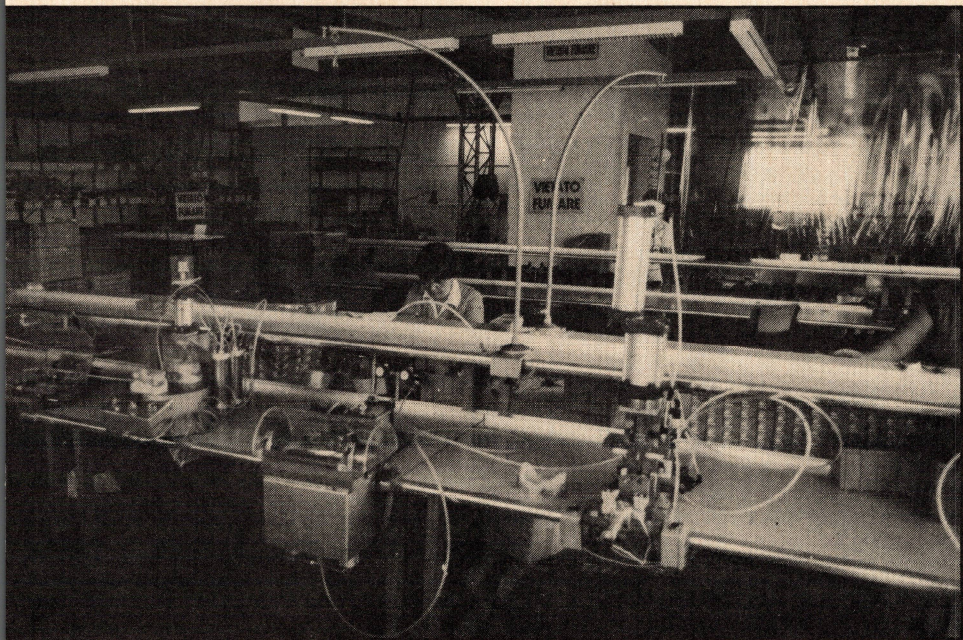
Scarpati is now 41 years old and just recently retired from active competition. He is a Mares sales representative in the Naples area and also a technical consultant for the company. Mares produces a special line of professional free diving equipment called the Scarpati Line with his guidance.

Mares' involvement in Italian spearfishing competition has helped their equipment sales greatly. Spearfishing championships are still closely followed by Italian divers and success in this area means better sales in the dive shops. The diving public likes to be associated with the winners. Even in the United States Mares is the number one selling brand of pneumatic spearguns.

The MR-12 III regulator is still another example of AMF Mares taking a good idea and making it better. The MR-12 was originally designed and produced by AMF Voit of Santa Ana, CA. It sold well in its heyday and underwent several engineering updates. Then, AMF Mares acquired the production rights to the design and now manufactures it in Italy.

AMF Mares engineers brought the Model II version to Rapallo and revamped it completely. They improved the regulator's breathing performance and made the MR-12 III competitive in the marketplace. Today, it is the best selling regulator in Europe and gaining in popularity here in the U.S.

After three and one-half decades of growth and prosperity, AMF Mares is still going strong. The company has become both an innovator of new equipment designs and a trendsetter in the marketplace. For more information about AMF Mares products, see your local dive store or contact the exclusive U.S. distributor: SeaQuest Inc., 2151-F Las Palmas Drive, Carlsbad, CA 92008. 



The facemask assembly line at the factory. Beginning as a small mask and fin company, AMF Mares has grown into the largest European diving equipment manufacturer.

Part of the success of the Plana fin is the bonding process used by Mares. The secret formula produces an inseparable bond between foot pocket and fin blade. The fin will not de-bond under any type of condition. The bond lasts for the entire life of the fin.

Since the original full foot pocket Plana in 1978, Mares has gone on to develop other models. A heel strap version known as the Power Plana was introduced in 1980. This model is particularly popular among American divers.

The Plana Concorde long blade professional fin was introduced in 1982. Over a yard long, this Plana was designed for free diving and spearfishing. It features

(LSR) for masks and snorkels. LSR has less tendency to turn yellow. It also has a better feel to it; it is softer, less like plastic. It produces a better finish, comes out of the mold almost perfect. It took Mares one and one-half years to perfect the process of molding LSR. All its silicone masks are now made of this material, including the black models.

Mares has traditionally been engaged in the manufacturing of serious free diving equipment such as low volume masks, long blade fins, zipperless wetsuits and pneumatic spearguns. In fact, Mares is the number one selling brand in all of Italy. They have a 33 percent share of the market, with the remainder split be-

the mini pony



Out-of-air emergencies have raised quite a controversy in sport diving over the past years. There are many methods and procedures for coping with them. One large faction believes in the buddy breathing approach. Another advocates the octopus alternative.

Both solutions work and both have their inherent disadvantages. And, what happens when both divers run out of air at the same time?

One small segment of the diving population on the East Coast has approached the out-of-air dilemma differently. The wreck divers of New York, New Jersey and Pennsylvania use a pony bottle—a small, 12 to 15 cubic foot tank equipped with its own separate regulator. This dwarf unit is mounted with brackets to the diver's standard scuba rig. The only problem with pony bottle systems is that they are expensive and bulky. They are also hard to find in dive stores. Most wreck divers build their own systems.

There is, however, an alternative to the pony bottle that is less expensive and commercially available in dive stores or direct from the manufacturer. Submersible Systems Inc. has produced a mini pony bottle system called the Xtra Air EBS. EBS stands for Emergency Breathing System. It is a miniature version of the pony bottle system which offers the advantages of compact storage, easy transportation and instant availability.

The Xtra Air EBS was designed and developed by a California engineer, Larry Williamson. In 1979, he started a small company called Submersible Systems Incorporated and began to produce these mini pony bottles in his Huntington Beach facility. The system was written up in 1982 issues of SKIN DIVER and Undercurrent. Despite the favorable reports, the concept never caught on in a big way.

Yet, serious sport divers and professionals from many diverse industries were quick to grasp the concept and appreciate the advantages of the Xtra Air. Williamson has sold thousands of units to fire fighters, police emergency units, Hollywood stunt coordinators, commercial divers and military pilots.

Owing to the widespread need for emergency breathing systems, Williamson has developed a whole family of mini pony bottles for use in every type of situation. There are now four different models and more on the drawing boards.

The Xtra Air EBS consists of two basic

components, a compact regulator and a miniature cylinder. This latter has a small diameter (two inches for most models) and is made of super tough aluminum. The regulator is a one piece, balanced, single stage demand type with mouth-piece, breathing diaphragm, demand valve, exhaust valve and pressure gauge all in one unit. The whole regulator fits into the palm of your hand and weighs less than a pound. It is quite a remarkable piece of engineering.

A fill adapter comes as a standard accessory with the Xtra Air EBS system. The user simply unscrews the pressure gauge attachment, installs the fill adapter and hooks it up to a standard air filler yoke found on any dive store compressor. A standard fill is 1,800 psi.

The major advantage of the Xtra Air EBS is its ultra-compact design. There are no bulky fittings or dangling hoses to become entangled. The whole unit (standard single) is only 15 inches long and weighs two pounds. It stores beautifully inside your dive gear bag and features a manual shut-off knob for preventing air leakage. The Xtra Air EBS can be worn on a diver's belt, strapped to the leg, or fastened to a BC jacket strap. In fact, it can be tucked inside a BC jacket, close to the diver's body. You'll hardly know you are carrying it.

The second major advantage of the Xtra Air EBS is that this mini pony bottle is totally independent of your primary breathing unit. If your scuba rig became entangled in monofilament line, you could ditch it and make an emergency ascent with the EBS alone.

Still another advantage of the Xtra Air EBS is the cost. These units sell anywhere from \$140 to \$200, depending on the size and model selected. In most cases, the EBS is not too much more expensive than an octopus second stage and certainly less expensive than the customized pony bottles of the East Coast wreck divers.

How much air do you get? The standard single EBS for sport divers holds two cubic feet of air at 1,800 psi. According to Williamson, most divers can get seven to eight breaths of air from this unit at 100 feet. You could probably get 30 to 40 breaths of air in shallow water. The seven to eight breaths at depth appear to be sufficient air supply for making an emergency breathing ascent.

The compressed air cylinder utilized

Strap on one of these ponies and be prepared for anything!

TEXT AND PHOTOGRAPHY BY GERI MURPHY



The Xtra Air EBS comes in four models: (from left) eight, four, two and 1.7 cubic feet. The regulator (left) has a large knurled on/off knob and a smaller knurled screw.

have been tested for 120,000 fill cycles.

Because of the thickness of the walls of these little cylinders and their high margin of safety, the Department of Transportation has approved them for a special DOT E7737-1800 rating. This allows the cylinder to be used without a hydro test, ever.

The cylinder has a brushed aluminum finish. The standard model is 2 inches in diameter and a little more than 13 inches long. It comes with a neoprene collar for strapping it onto a belt or BC harness.

The Xtra Air EBS regulator is equally unusual. It takes the 1,800 psi air from the cylinder and reduces it to ambient breathing pressure in a single step. This unique design eliminates the need for a first stage/second stage with inter-connecting pressure hose. This is the key to its small size. It is made of corrosion resistant plastics, anodized aluminum alloys and stainless steel. It is a simple design and requires very little maintenance.

Built into the regulator is a stem-type

pressure gauge. This looks much like a large knurled screw with a screwdriver slot on top. In the center of the slot is a small pin. When the cylinder is full, the pin extends to the top of the slot. As the pressure decreases, the pin recedes into the slot until it is flush with the bottom. In order to fill the cylinder, the user unscrews the gauge fitting.

The regulator is also equipped with a large red aluminum knob for turning the air pressure on or off. The knob can be manipulated while wearing gloves and is easy to locate because of its color.

Because of the diverse appeal of the Xtra Air EBS, Williamson has designed and produced four different models.

The standard single cylinder model was designed specifically for sport divers and remains the most inexpensive unit. The two cubic foot capacity appears ideal for typical sport diving depths of 30 to 70 feet where a diver can make a direct ascent. The cylinder, with regulator, is 15.5 inches long and easy to carry.

There is also a twin-tank version which utilizes two standard cylinders and holds a total of four cubic feet of air at 1,800 psi. This unit is 16.5 inches long. The twin-tank unit provides twice the amount of breathing time, about 14 to 16 breaths at 100 feet or some 80 breaths in shallow water. This model is a favorite among Hollywood underwater stunt people who need a unit to fit under their costumes.

There is also a husky model which employs a much larger cylinder 3.5 inches in diameter and 17 inches long. This unit holds eight cubic feet of air at 2,250 psi and appears especially desirable to sport divers involved in serious shipwreck exploration. A diver who runs out of air while making a deep wreck penetration needs time (and air) to get out of the wreck before beginning the ascent. This model could provide up to 30 breaths at 100 feet.

The smallest EBS is a military model which employs a two inch diameter cylinder only 10 inches in length. This cylinder is rated for 1.7 cubic feet of air at 1,800 psi. Its regulator is fitted with a 10 inch long flexible breathing hose (BC type) and mouthpiece. This unit was designed specifically for use by helicopter crews in case of an emergency ditch in water. They attach the small EBS to their jackets with the mouthpiece within easy reach.

It appears that the Xtra Air EBS is a very safe approach to coping with out-of-air emergencies. The cost is moderate when you consider the stakes involved.

For more information about the Xtra Air EBS, check with your local dive store or write to: Submersible Systems, Inc., 16442 Gothard St., Unit G, Huntington Beach, California 92647. If you need information in a hurry you can call: (714) 842-6566.

for the Xtra Air EBS is very special. Produced by the Cliff Impact Division of the Parker Hannifin Corporation, this cylinder is a high grade 6061-T6 aluminum alloy. This material can stand high pressures and repeated stretching.

While this cylinder is rated for a working pressure of 1,800 psi, it is constructed to withstand a minimum burst pressure of 6,000 psi. Destructive tests indicate the little cylinders actually burst at pressures in excess of 7,000 psi and

The Parkway Plush Suit is made of a soft, comfortable neoprene which hugs the body.

Parkway Plush Wetsuit

Softer with four-way stretch for freedom and great fit



photos/Bonnie J. Cardone

The Plush Suit features a farmer john with a large Velcro closing tab on the left shoulder.

BY JIM WALKER

Let me say right off the top that a black and white photograph can't do justice to the Parkway Plush Suit. It's a deep navy blue on the outside which, in sunlight, has an eye catching luster. The explanation for this is in the suit material.

Parkway has helped develop a new neoprene/nylon fabric called Thermo-flex® that provides several benefits. The neoprene itself is much softer and stretchier than older versions. Bonded to a new monofilament nylon fabric, this produces a material that stretches easily in four directions. This makes the suit easy to put on and allows it to conform closely to the diver's body contours, minimizing air pockets which can pump in cold water. The four way stretch material is very comfortable, allowing increased freedom of movement and yet, at the same time, a snug fit without binding. The extra stretch also allows stock sizes to fit as if they were custom made. (It should

also easily compensate for those extra pounds a diver might put on while on an extended dive trip.) The one-quarter inch suit I tested was very warm yet felt as comfortable as a one-eighth inch suit.

In addition to providing extra stretch and an attractive sheen, the monofilament nylon outer material dries very quickly and is resistant to perspiration and the effects of chlorine in pool water.

The Plush Suit gets its name from the inner lining. This is a special, royal blue, nylon pile which slides easily over the skin, wet or dry. The pile slows water flow into the suit and thus increases warmth. It's also designed to be fast drying.

The Plush Suit is cut for comfort. The farmer johns are constructed of one piece of neoprene from shoulder to knee. The jacket has raglan-style sleeves and an integral beavertail. Both the beavertail and the left shoulder strap of the farmer johns close with Velcro® tabs. The suit

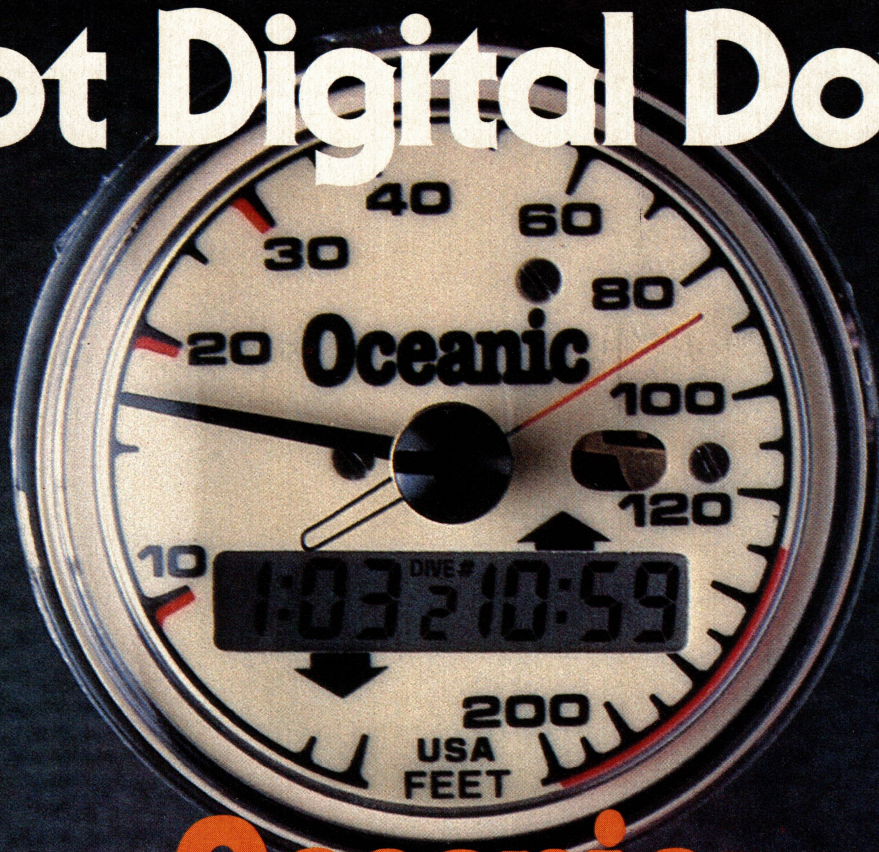
comes standard with ultra-large sewn on knee pads for protection and durability. Additionally, the lady's Plush Suit has a jacket cut higher at the hip.

The jacket zipper is corrosion proof Delrin (YKK) with a spring loaded metal slide that locks in place when the tab is not actually being pulled.

All seams of the Plush Suit are triple glued and strobelt stitched inside and out. The stitching doesn't penetrate through the neoprene, eliminating pinhole water leaks that can appear with wear. All edges are securely bound with stretchy sewn on nylon seam tape.

The Parkway Plush Suit, in sizes small through XXXL, is available in 1/8, 3/16 and 1/4 inch thicknesses in men's style (\$251, \$270 and \$286, respectively) and in 1/4 inch women's style (\$288). Other women's suits are available on special order (no extra charge). Stop in at a Parkway dealer for a look at this classy suit. ➤

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introduces five bold information displays with **all** the data necessary for U.S. Navy no-decompression calculations. The digital displays (high contrast LCDs) track the diver's **bottom time**, **surface intervals**, and **number of dives** powered by a tiny lithium cell rated for 6600 hours. The **present depth** and **max-depth** indicators are analog functions accurate to $\pm 2\%$ at 100'. Without switches or buttons, all displays automatically activate when you submerge and are retained upon ascent. The DataMax™ is available in a wrist unit, console mounted, and as a module to fit many of the popular consoles available; all with an exclusive two year warranty. See the revolutionary DataMax™ at your professional dive store. Another diving essential redefined.



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JIM AND WASP TRAINING AT COLLEGE OF OCEANENGINEERING



**TEXT AND PHOTOGRAPHY
BY CHRISTOPHER SWANN**

An oil rig drilling in 1,000 feet of water is forced to shut down because of the failure of a seabed component. Every hour that the rig is out of action costs the oil company thousands of dollars and gives high-powered executives in Houston nervous stomachs. Repairs must be made without delay.

On the deck of the rig, taking up over 2,000 square feet and weighing more than 100 tons, is a bell saturation diving complex consisting of a series of interlocking chambers, a diving bell, winch system, control vans and rack upon rack of high pressure bottles filled with expensive gases. Manning a bell saturation system requires, sometimes, a crew of 20-24 men.

Next to it, occupying 375 square feet and weighing, with support equipment, less than 10 tons, is a pair of Atmospheric Diving Suits (ADS) that look as if they are intended for working in space rather than under the oceans. The first, a man-shaped device operable to 3,000 feet, is known as JIM; the second, a legless thruster-powered tube with arms, rated to 2,000 feet, is WASP. Only six men are needed to operate both systems.

The oil company superintendent tells the respective crews to prepare to dive. Half an hour later, his suit checked out and ready to go, an operator in coveralls climbs into the JIM and is lowered over the side; five minutes after leaving the surface, he is on the bottom and ready to go to work.

Back on the surface, the saturation crew members are still preparing their system.

In the ADS control van the supervisor and the oil company superintendent watch the JIM diver on the TV monitor as he walks with a curious rolling gait around a thicket of valves and hydraulic lines. His voice comes crisp and clear over the comm-box and the oilman has no difficulty communicating with him.

Ninety minutes into the JIM operator's dive, the saturation crew puts a team of four divers into the main chamber and begins pressurization.

After another four and a half hours, the

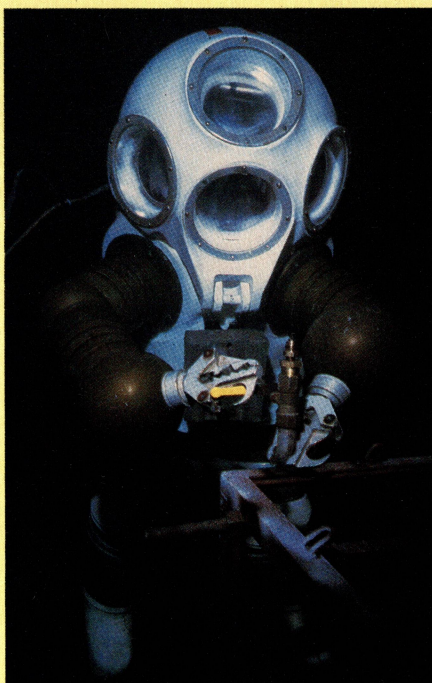


The legless WASP is rated to 2,000 feet.

JIM diver completes the job and is winched to the surface. Since he has remained at atmospheric pressure throughout the dive, he climbs out of the suit the minute he returns to the deck and goes below for a well-earned meal and a rest. Drilling resumes.

At this point there is no further need of the saturation crew. Let us, however, assume there are no atmospheric diving suits on the rig: Not for another 16 hours would the sat divers reach bottom pressure and transfer to the bell. Although they could complete the repairs in half the JIM operator's time, their dive would not end until they had undergone almost nine and a half days of decompression.

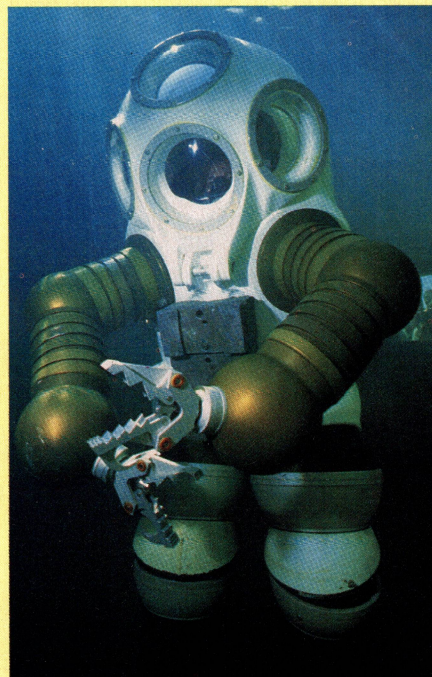
The illustration is, of course, fanciful and admittedly unfair to the saturation divers. But, it does serve to show why JIM and WASP are increasingly being used for tasks such as drilling rig support and platform inspection and repair: The dexterity of the free-swimming diver is



A student practices using a wrench.

more than offset by the lower cost and greater safety of the atmospheric suit. At the same time, no one expects the "wet" diver to go the way of the dodo bird; there are simply too many types of underwater work—construction for one—that will continue to require the presence of the human hand for a long time to come.

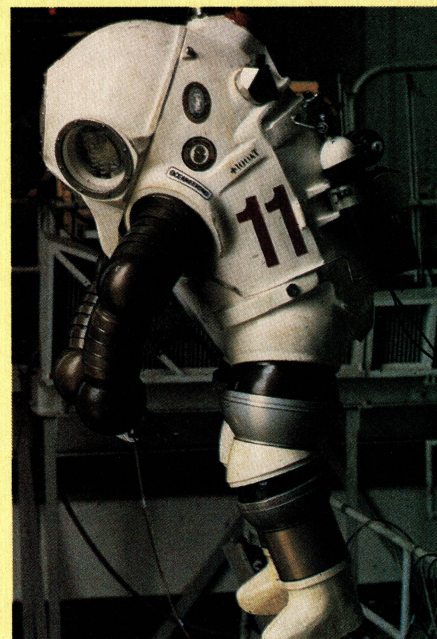
When Oceaneering International, the owners of JIM and WASP, acquired what is now College of Oceaneering (CO) in 1971, the idea of a diving school offering ADS courses would have seemed absurd. "Armored diving suits," as they



JIM's claw manipulators are very versatile.

were then called, were regarded as technological dead-ends that had breathed their last with the dive of the British Iron Man to the wreck of the *Lusitania* in 1935. It was little known at the time that since 1968 a small British company, DHB Construction Ltd, had been quietly developing an updated version of the Iron Man, named JIM—after Jim Jarrat, the diver who descended to the *Lusitania*. Although it was dismissed by most as having no future, Oceaneering recognized the potential of the suit and in 1974 bought the company. Now, with a fleet of 17 JIMS and 12 WASPS deployed worldwide, Oceaneering is the major contractor in the atmospheric diving market.

"The need to dive in ever deeper water



The JIM suit is deployed into the test tank.

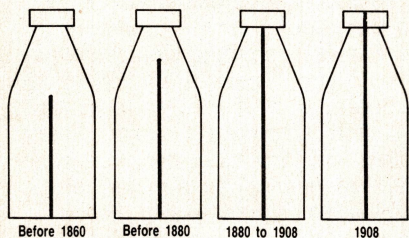
and the limitations of man's ability to undergo saturation for extended periods have resulted in the proliferation of diver alternative work systems. This will allow man to dive to 3,000 feet and work without the need for decompression," Jim Joiner, president of College of Oceaneering explained. Until this year JIM/WASP training was limited to Oceaneering employees and specialist users such as marine scientists. Now, with the company moving the bulk of its ADS training to College of Oceaneering, students at the school and qualified outsiders can enroll in regular eight week courses alongside Oceaneering trainees. Three courses are being offered this year, with an increased number in 1985. It goes without saying that graduates stand an excellent chance of going to work for the parent company.

Selection for the courses is strict. As a minimum, applicants must have completed CO's air mixed-gas course, or equivalent and have placed in the top half

(Continued on Page 124)

photo/Geri Murphy

GEMS FROM THE DEEP



TEXT AND PHOTOGRAPHY BY RICHARD TRIEBE

Before I started diving I enjoyed collecting bottles. Now, with diving, my bottle collecting has gotten a real boost. It's always a thrill to find a new and interesting bottle. When viewed later, it recalls that pleasurable experience all over again. It is truly amazing the amount of history that can be learned from the study of bottles. They can be very useful for wreck dating and identification. There has been a definite evolution in the shapes and styles, and the composition of the glass itself, so experts can identify the period of nearly any bottle to within a few decades.

Bottles can be found in any body of water man has been in contact with over the last 2000 years. The more the spot has been frequented, the more likely artifacts will be found. Shores around cities, old piers, bridges and former military encampments are all ideal places to search. Most locations can be found with a little common sense but some require research to produce maximum results. Sources of information may be classified as follows:

1. Elderly residents: They can be very helpful and are usually glad to have someone to talk to.
2. Newspapers: A very valuable source concerning historic events and exact locations of old cities and military bases.
3. Libraries: Help trace local history.
4. Maps of the area: Both new and old.
5. Museums: Useful in gathering more new information about the area.

You need to know which bottles are keepers and which are trash. Old bottles are not only beautiful, but can be valuable as well. The main thing to remember is that the more demand for a particular style of bottle the more value. Blue, red, emerald green and amber bottles are much more in demand than clear or aqua. Also, attractive designs and embossing are quite desirable. Condition is probably more of a determining factor price-wise than anything else. A bottle

can be the right color and design but if it's scratched, cracked or chipped it is almost worthless. Unfortunately, most bottles found in the water have tiny scratches from the combined effects of sand, stones and waves. However, bottles found buried in a silt bottom are usually quite scratch free.

I myself don't collect bottles solely for sale; for me it is a labor of love. I truly enjoy looking at beautiful things.

Dating your finds can be of help in determining which bottles to keep and which might have greater value. First, I look at the bottle as a whole, then I look at the seams. Generally, the older a bottle, the lower the seams. These were made when the bottle was in a mold and some of the glass filled the crack between the halves. Afterward, the bottle was taken out of the mold and put on a pontil so the neck and lip could be fashioned. This device left a scar on the bottom of the bottle. A pontil scar dates a bottle from 100 BC to around 1865. From 1865 to 1908 bottles were made in more or less the same way although the seam moved up from the shoulder to the bottom of the lip. The lip was still fashioned by hand but the pontil was replaced by a snap. The snap held the bottle without scarring, thus giving the bottle a smooth bottom. In 1908, the automatic bottle machine came along and changeover was very rapid. Seams then ran along the entire side of the bottle.

When I dive for bottles I use a compass, a mesh goodie bag and gloves. I swim a predetermined pattern using my compass and stop frequently to observe my surroundings and to monitor gauges. When I see a straight line or a color not compatible with the bottom, I investigate. If the object is mostly buried I try very gently to pry it out with my fingers. If it does not come out you must excavate it gently with your hands. This is where the gloves or mitts do more than keep your hands warm: broken glass can cut and


cold, numb fingers do not know they are being cut. When your find is in your hand determine if it is a keeper or not—if in doubt bring it along and sort it on shore. But, be forewarned, a sack full of bottles can get rather heavy!

Now you have raised your booty from the deep and weeded out the worthless bottles, you need to know how to clean them. A soapy steelwool pad will do nicely for the outside but the inside is somewhat more challenging. I usually start with soapy water and a bottlebrush to remove the bulk of dirt, then I take some copper tacks, put them in the bottle with a small amount of water, and shake vigorously. This should clean most of the bottles although there may be some stains that require stronger methods. A bit of steelwool attached by a rubberband to a coat hanger or dowl rod may be successful—if not, my final resort would be muriatic acid. This is very useful for calcium encrusted or stained bottles. Caution, however, should be exercised when using it. Never use it inside an enclosed area, never mix it with anything other than water and always wear rubber gloves and goggles. Never breathe its vapors and never get it on any substance you do not want damaged: It is very strong!

Put a plastic funnel in the bottle neck and very carefully pour in the acid. Watch that you don't splash because muriatic acid will attack anything other than rubber, glass and some plastics. Leave the acid in several minutes or until it stops bubbling. Then reverse the process and return the acid to its original container. Wash the bottle thoroughly with water only and hopefully, your bottle is clean. Be aware though, that some glass stains cannot be removed owing to the deterioration of the glass itself. Sunlight and moisture can combine to make a rainbow effect, commonly known as sick glass. This is actually a deterioration of the glass and if cleaned too much will cause flaking away of the surface.

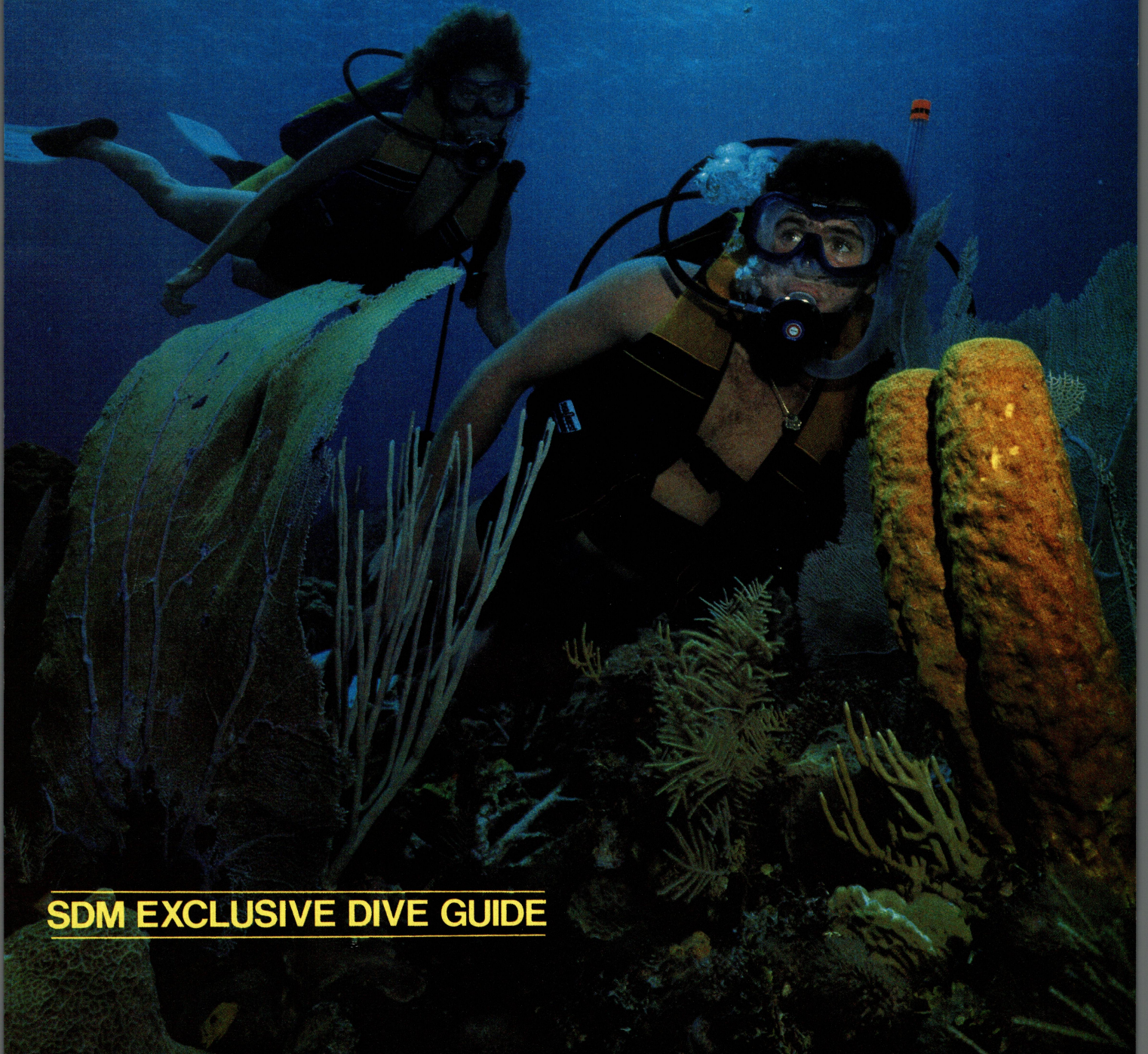
I know it's disappointing to find a nice bottle that is broken or cracked, but it is possible to make several things from all those pieces. Take a plain quart bottle and put on wall tile adhesive. Then press on all those beautiful bits of glass and wait for the glue to dry. After a day's wait, prepare wall grout and apply as you would on ceramic tile, being careful not to leave any edges of the glass exposed as they can be very sharp. When the grout has dried you have a decorative decanter you can be proud of.

It is possible to make beautiful and interesting stained glass in the traditional way or by embedding the glass in an acrylic resin.

As you can see, the uses for old bottles are many and varied. So the next time you're diving, stop and look around you. You just might see an unburied portion of a long lost bottle. 

Florida Keys

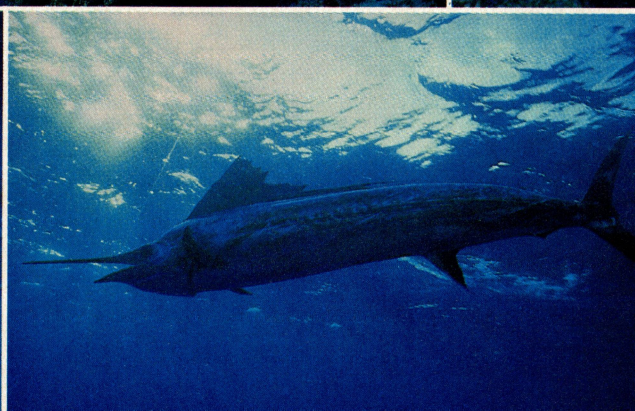
KEY LARGO TO KEY WEST

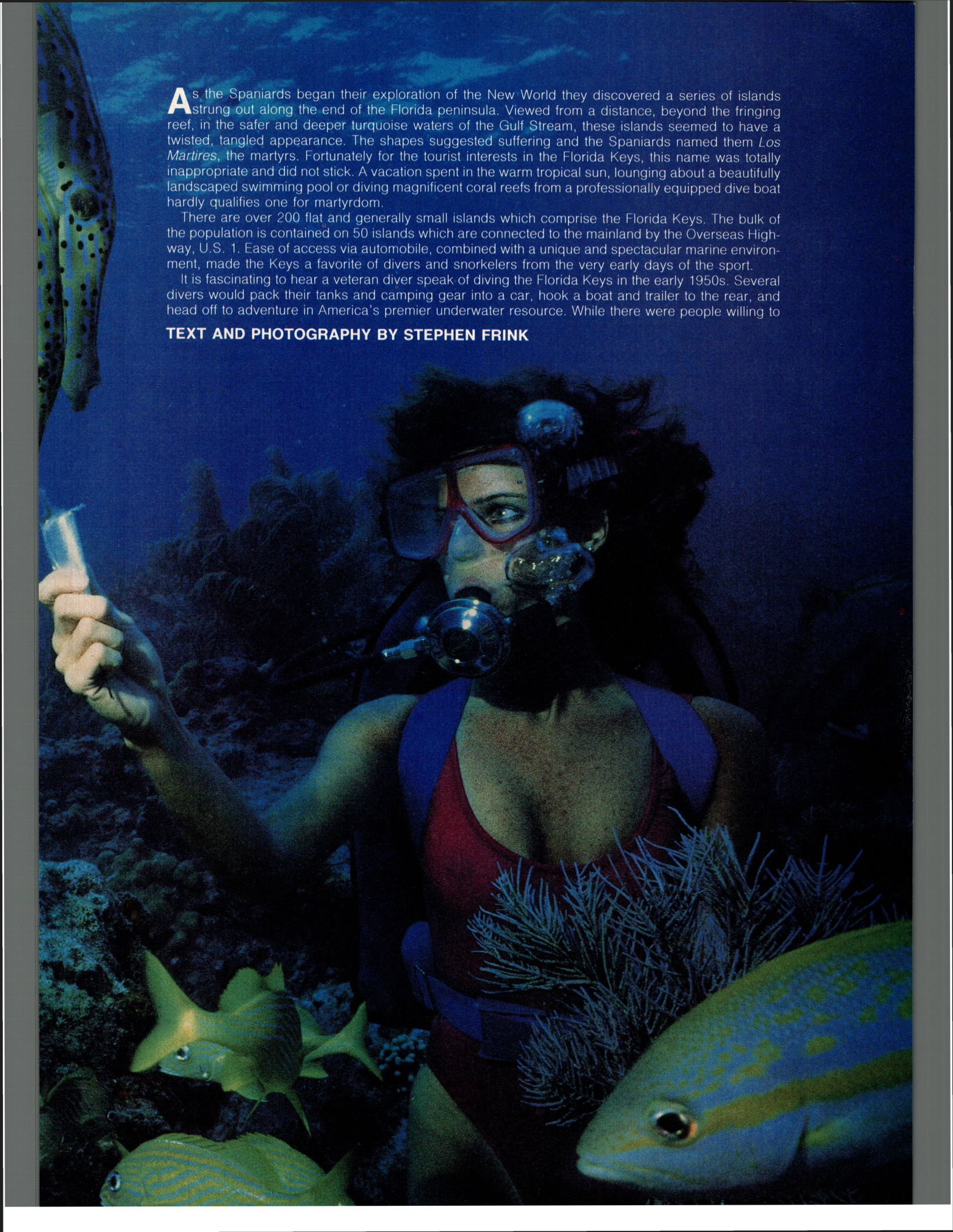


SDM EXCLUSIVE DIVE GUIDE

Florida Keys

America's Favorite Dive/Drive Destination



A full-page photograph of a woman scuba diving. She is wearing a red tank top, a blue BCD, and a diving mask with a red frame. She is holding a small, clear, cylindrical object in her right hand. The background is a deep blue underwater scene with various colorful fish, including a large yellow and blue striped fish in the foreground, and coral reefs. The lighting is soft, highlighting the diver and the surrounding marine life.

As the Spaniards began their exploration of the New World they discovered a series of islands strung out along the end of the Florida peninsula. Viewed from a distance, beyond the fringing reef, in the safer and deeper turquoise waters of the Gulf Stream, these islands seemed to have a twisted, tangled appearance. The shapes suggested suffering and the Spaniards named them *Los Martires*, the martyrs. Fortunately for the tourist interests in the Florida Keys, this name was totally inappropriate and did not stick. A vacation spent in the warm tropical sun, lounging about a beautifully landscaped swimming pool or diving magnificent coral reefs from a professionally equipped dive boat hardly qualifies one for martyrdom.

There are over 200 flat and generally small islands which comprise the Florida Keys. The bulk of the population is contained on 50 islands which are connected to the mainland by the Overseas Highway, U.S. 1. Ease of access via automobile, combined with a unique and spectacular marine environment, made the Keys a favorite of divers and snorkelers from the very early days of the sport.

It is fascinating to hear a veteran diver speak of diving the Florida Keys in the early 1950s. Several divers would pack their tanks and camping gear into a car, hook a boat and trailer to the rear, and head off to adventure in America's premier underwater resource. While there were people willing to

TEXT AND PHOTOGRAPHY BY STEPHEN FRINK



Diver Jim Slack with glass minnows, Pennekamp Park. This marine preserve attracts perhaps 450,000 divers and snorkelers per year.

Florida Keys

cater to the traveling diver back then, the service was confined to a compressor to provide air and directions to find the reef. However, the underwater experience was awesome, and despite the primitive nature of the services, divers returned year after year to view the massive fish populations, clear waters and spectacular coral formations that became synonymous with Keys diving. As diver traffic to the Keys became more consistent, the services available to divers became more sophisticated. It has been a gradual evo-

lution and the Florida Keys today is one of the world's major dive destinations.

The sheer number of divers visiting the Florida Keys does not necessarily mean your dive boat will be overcrowded. The Florida Keys are 108 miles long, ranging from Key Largo in the north to Key West at the southernmost tip. Within this area is the widest selection of dive operations anywhere in the world, so the diver traffic is well distributed. Both the flavor of the community and the flavor of the diving will vary between the Upper Keys, Middle Keys and Lower Keys and each area maintains a faithful following. However, throughout the Florida Keys there will remain certain constants.

You can be assured that no passport

will be required to enter and the primary language will be English. The monetary unit will be the American dollar and the electrical service will be 110 volts. All of this may seem obvious, for the Florida Keys are part of the United States. But upon arriving in the Keys there is a distinct Caribbean feeling which is not replicated elsewhere in the United States. The weather pattern is one of very mild winters and warm waters. The temperature on the coral reef will range from 69°F in the heart of winter to the upper 80s in the summer. Winters are more likely to bring the brisk winds which cause rough seas, but the summer is predictably calm.

The coral reef will be of the fringing type. While there may be an isolated cor-

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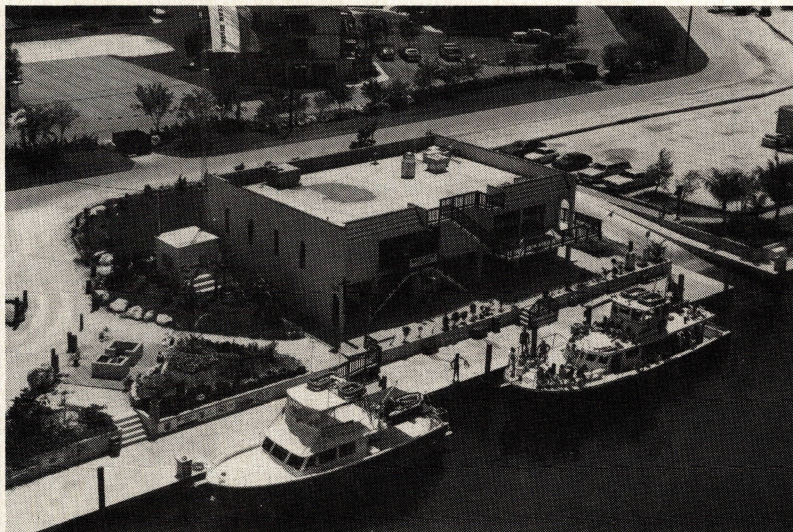


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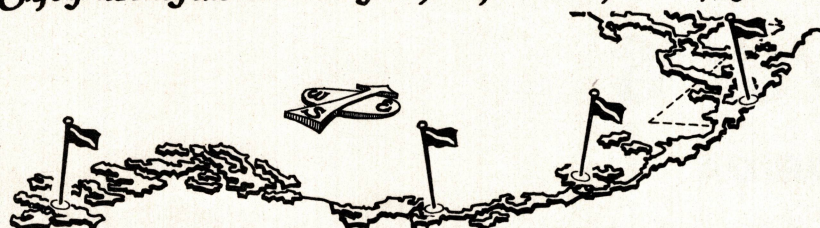
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Florida Keys

al head as near as two miles from the shoreline, the best of the reef will be four to six miles from shore. This necessitates diving by boat and the local dive industry has developed to serve this need. To my knowledge there is no quality shore dive in all the Florida Keys. The reef, on the other hand, is close to the Gulf Stream and is both warmed and cleansed by it. Mangroves surround most of the Keys and help filter the turbid waters from Florida Bay before tidal shifts bring them to the reef. In addition, the mangroves act as a nursery for many of the reef residents and can be absolutely fascinating areas for snorkeling, something to consider on those days when seas are too punishing for a reef excursion.

The Florida Keys are very easy to traverse by automobile. Over the past four years there have been major improvements to the Overseas Highway, and the two hour drive from Key Largo to Key West is quite pleasurable. The bridges have been widened to four lanes in some cases, and traffic moves at a moderately brisk pace. Remember, however, that the traffic will be a mixture of vacationers, with one eye to the road and the other gazing seaward, and locals seeking to move quickly from point A to point B. Defensive driving is certainly advisable. The Mile Marker system is a means of gauging the trip south. Key West is Mile Marker 1. Marathon is found around the Mile Markers 48-52, and Key Largo ranges from Mile Markers 95-108. Most businesses on the highway will include a Mile Marker reference in their address, so finding one's way about the Florida Keys is very straightforward.

The tourist industry is the primary source of revenue for the Florida Keys and most of the businesses are directly or indirectly involved in watersport activities. Accommodations range from guest house to motel to full resort facilities, and most offer dive/lodging packages which will save money as compared to purchasing these services *à la carte*. Campgrounds, seasonal condominium rentals and short-term rentals of time-share units help to complete the accommodation picture so that virtually any level of luxury is available to the dive tourist. However, with so much choice may also come confusion and it may be best to direct a telephone call to the dive shop in advance to determine all the options.

The quality and variety of dining available in the Florida Keys is a source of great local pride. Each community contains several high quality restaurants, each with different specialties. While in some Caribbean resorts the menu might

FOR MORE INFORMATION

The Florida Division of Tourism has an Office of Visitor Inquiry in Tallahassee. According to a department source, the walls of this office are lined with brochures on Florida. You can call, write or visit this office and ask for information on any area in the state you plan to visit. If you tell the office your interests (i.e., golf, tennis, scuba diving, etc.) they will tailor the material sent to these interests. You can also ask for a road map. Contact:

Office of Visitor Inquiry
126 Van Buren Street
Tallahassee, FL 32301
(904) 487-1462

General information on Florida can also be obtained from either of the offices listed below:

Florida Dept. of Commerce
Division of Tourism
Collins Building
Tallahassee, FL 32301
(904) 488-3187

Florida Dept. of Commerce
Division of Tourism
2701 Le Jeune Road, Suite 330
Coral Gables, FL 33134
(305) 446-8106

Information can also be obtained from the Chambers of Commerce on the various Keys;

KEY LARGO
MM 105.5
Overseas Highway
(305) 451-1414

ISLAMORADA
MM 82.6
Overseas Highway
(305) 664-4503

LONG KEY
MM 68
(305) 664-4740

KEY COLONY BEACH
MM 53.5
Overseas Hwy.
(305) 289-1212

MARATHON
MM 49
3330 Overseas Hwy.
(305) 743-5417

BIG PINE KEY
MM 31
Overseas Hwy.
(305) 872-2411

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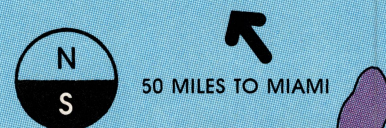
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Florida Keys

be restricted to one or two entrees per meal, in the Florida Keys the whole gamut of cuisine is available. Seafood is probably consistently the best, owing to the freshness of the daily fare, but it is also possible to find French, Chinese, Italian, Mexican and other regional specialties. Here again, it might be best to consult the dive operator as to the best dining according to both your budget and the quality of the food.

The night life in the Florida Keys is also more diverse than is typical of most dive destinations. Key West clearly has more nightclubs and nocturnal activities than are found elsewhere in the Keys, but each community will have bars, often with live entertainment; movie theaters; and often cable TV in the hotel rooms. It may be that an occasional night dive is sufficient entertainment for the evenings of your dive vacation, but it is nice to know that alternatives do exist.

While the watersports of the Florida Keys include a sophisticated sportfishing industry, boardsailing, jet skis, canoeing and sailing; scuba diving and snorkeling clearly invite the most participants. Most of the dive boats in service for daily reef trips will range from 30 to 65 feet in length. They will be U.S. Coast Guard



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KEY LARGO

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GULF OF MEXICO

ATLANTIC OCEAN

GULF STREAM

certified to accommodate between 6 and 40 divers and the captains will be licensed according to the number of passengers they can accommodate and their cruising range. Most of these boats will be equipped with dive platforms, freshwater camera rinse, sundecks, stereo and oxygen for diver safety.

Most of the dive shops throughout the Keys are members of the Keys Association of Diving Operators (KADO), and diver safety has been one of their most crucial issues. In an effort to better gauge the ability and experience of visitors KADO operators began requiring logbooks of their divers as of August 1983. This has proven a successful program. Divers who don't carry a logbook or are unaware of the requirement are given complimentary logbooks to get them started. According to KADO president Spencer Slate, "The public seems to be receptive to the new policy and appreciates our concern for their safety." For the traveling diver the use of logbooks may have an additional benefit in that the operator will be more likely to schedule a more challenging deep dive or wreck dive if he has some indication of the experience level of the passengers aboard.

Beyond the basic reef trip there is a great variety of dive related services to be found throughout the Keys. The underwater photographer can get E-6 film processed daily, rent cameras or strobes, buy U/W photo gear or even enroll in a photo seminar. Dive equipment may be repaired or replaced and instruction, as well as instructor certification, is available. Each year there seem to be more resort courses taught and the Florida Keys have long been the place for open ocean checkout dives for divers from the northern states.

The ample activities and variety of accommodations available above the surface is complementary to the very special environment beneath the sea. The average Florida Key reef will have visibility ranging from 30 feet to 100 feet. Most of the diving is done in the 25-40 foot range, although both deeper and shallower reefs are available throughout the Keys. There are many varieties of hard corals, encrusting sponges and gorgonians. There will likely be large, healthy fish populations, especially grunt and snapper. There will be angelfish, eels, barracuda, grouper, trumpetfish, chromis, jack, Atlantic spadefish, damselfish, squirrelfish, hogfish, crab and lobster on an "average" reef and occasionally a turtle or rays will swim by. Only on very rare occasions will any sharks be sighted and if you are lucky enough to glimpse one it will usually be off in the distance. While this may be the general reef configuration, each geographic area of the Keys has distinctly different diving. To better examine the unique characteristics of these reefs we will individually consider the Upper, Middle and Lower Keys.

meet the Cuddly Critters of



photos by Stephen Frink

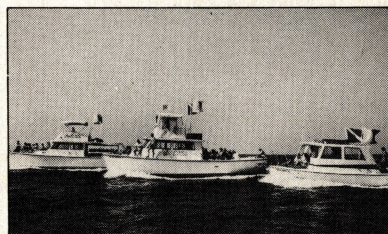
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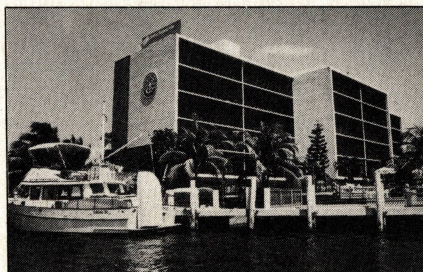
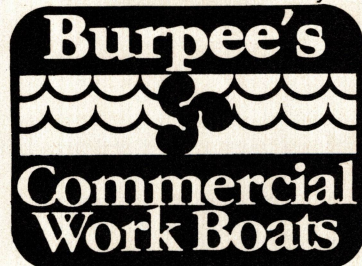


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UPPER KEYS

Key Largo, Tavernier and Islamorada comprise the centers of population in the Upper Keys and have the majority of the dive shops as well. One reason for this concentration of diver service is John Pennekamp Coral Reef State Park, which attracts perhaps 450,000 divers and snorkelers annually. Technically, the waters from the shore to three miles out are under Florida state protection and this is Pennekamp Park. The waters from three to six miles, where most of the diving and snorkeling actually occurs, is under federal control and is known as Key Largo Coral Reef Marine Sanctuary. The distinction is more literal than actual and collectively these waters comprise over 100 square miles of marine preserve. Lobster of legal size may be taken during the season and line fishing is permitted, but spearfishing or even possessing a spear-gun within park boundaries, as well as coral collection, are strictly forbidden. Park rangers are equipped with VHF marine radios, as are almost all of the dive boats, and violations will be reported and regulations enforced.

The dive operators serving Pennekamp are proud of the diving and strive to keep it as pristine as possible. To this end they are very careful about anchor placement and most will use the mooring buoys

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whenever possible. Careless pleasure craft without an economic or philosophical stake in the quality of the marine environment have been known to drop anchors directly on coral heads, seriously damaging the reef. This too is illegal and violators are subject to very stiff penalties. Harder to police, but equally deleterious, is diver damage to the reef. Improperly weighted or clumsy divers can recklessly bang into the coral, damaging polyps or even breaking off branches. The damage perpetrated by one, compounded by 450,000, clearly points to the necessity of ecological awareness.

While dive shops at the north end of Key Largo will occasionally send divers as far south as Molasses Reef, and operators at the south end of Key Largo will occasionally venture as far north as Carysfort Reef, the majority of the diving will be done on the reefs closest to home. Fortunately, there is excellent diving throughout the park, but you might be well advised to inquire as to which reefs are most likely to be visited.

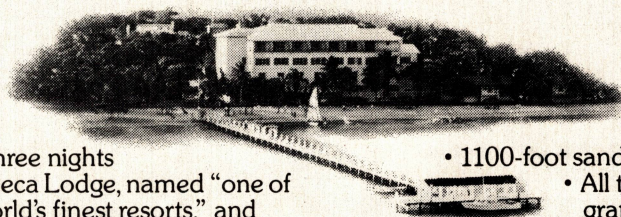
Exploring the park from north to south, we first note **Carysfort Reef**, marked by a massive, 125 foot steel tower. Because it is a longer run for most dive operators, Carysfort is not dived too heavily at present. As further development occurs in North Key Largo this may not be the case, but for now Carysfort is a good place to avoid the crowds. The prominent features beneath the surface include great stands of elkhorn and staghorn coral, as well as large brain and star coral clusters throughout the shallows. The marine topography at the deep end of the reef includes more scattered coral heads interspersed with colorful barrel sponges.

There is ample fine diving to be found within the general confines of **The Elbow**. The popular reefs of The Elbow rarely exceed 25 feet in depth, and are well suited to both the scuba diver and the snorkeler. There are the scattered remains of several wrecks here, and nearby is the **City of Washington** with its semi-tame barracuda and morays.

The symbol of Pennekamp Park has come to be the statue of **Christ of the Abyss**. On a reef south and to the inside of The Elbow, the statue is a marginal dive in rough seas but absolutely beautiful when the conditions are right. The statue itself sits on a concrete pedestal in 25 feet of water. The tops of the outstretched arms are within ten feet of the surface, easily visible to snorkelers or passengers on the glassbottomed boats. The reef surrounding the statue is not massive, but there is some fine elkhorn and brain coral and lots of tame marine life.

During 1942, German submarine warfare raged along the Florida coastline. In May of that year the Navy reported 49 ships torpedoed or shelled, and the freighter **S.S. Benwood** was one of these. The **Benwood** was loaded with ore when she struck another ship. While limp-

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Florida Keys

ing back to port she was torpedoed. Run aground in waters ranging from 25 to 45 feet deep, her superstructure blown apart as a hazard to navigation, the *Benwood* today is one of the more interesting dives in Pennekamp. Like the Statue, the *Benwood* sits inside the outer reef line and consequently does not receive the benefit of the crystal Gulf Stream waters. But, under proper conditions it is a superior dive site. Her bow section harbors great schools of porkfish and goatfish and all manner of marine worms seem to adorn her hull. At certain times of the year there are swarms of glass minnows all about and jack and grouper become abundant predators.

Two miles farther south brings us to the swim-through caves inhabited by groupers and copper sweepers that so characterize **French Reef**. There are large stands of elkhorn coral and particularly voracious schools of yellowtail snapper which make it advisable to wear gloves when feeding the fish.

Molasses Reef is probably the best known site in the entire Keys because of its 50 foot steel tower and its bountiful marine life. When I think of Molasses, the most frequent images that materialize are of large schools of grunt, the ancient windlass from an old sailing vessel, an encrusted Spanish anchor and schools of barracuda hovering over broad sand patches. The corals are high profile spur and groove and for the marine photographer, the fish are easy to approach.

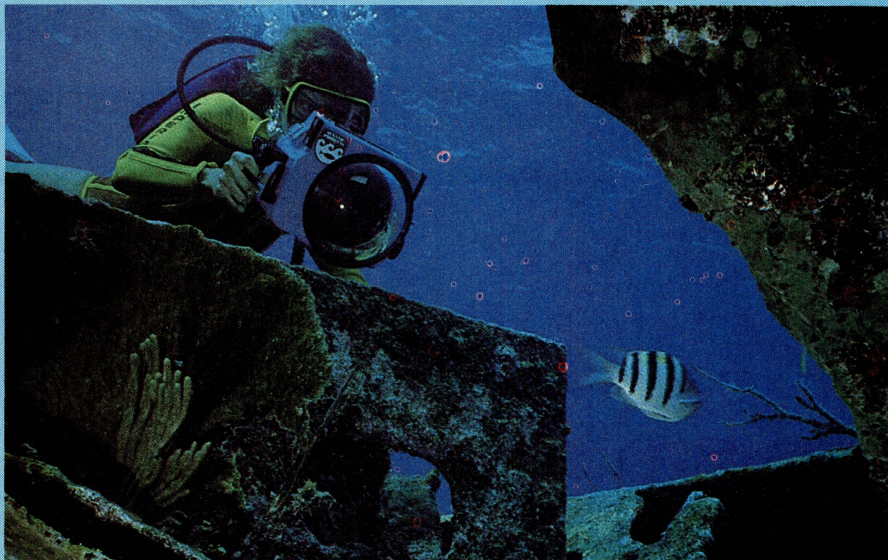
Several of the dive operators serving Pennekamp Park are trying to provide more variety in the type of diving available and so while they offer popular

name reefs on their itinerary, they may also offer a drift dive in 60 to 80 feet of water on the deep end of Molasses, a deep dive off Carysfort or the *Benwood*, or a guided fishfeeding dive. In addition, the members of KADO are actively seeking a derelict ship to sink in 80-100 feet of water as an artificial reef and dive site.

There are excellent reefs in the Upper Keys beyond the boundaries of Pennekamp and some very professional dive operators in Tavernier and Islamorada servicing these areas. **Pickles Reef**, just to the south of the park, is a beautiful shallow reef. Because it is outside the park, Pickles is popular for shell-collecting and spearfishing and I've found it to be one of the better reef areas for photographing macro subjects and juvenile tropicals. As with any shallow reef, however, it should be dived only on calm days to avoid the heavy surge. **Hens and Chickens** is closer to shore than most reefs and consequently has fewer days of spectacular visibility, with 25-40 feet the norm. The coral structures and fish populations are impressive, though. The drop-off at **Conch Reef** can be dived at anchor or as a drift dive and is an excellent spot to see pelagics.

Davis Reef is often visited by dive shops in the Islamorada area and is popular for both massive fish populations and impressive coral structures. **Crocker Reef** offers fine diving in depths ranging from 35 to 85 feet. The **Cannabis Cruiser** is the wreck of a dope smuggling vessel sitting upright in the sand at 110 feet. There are still bales of marijuana aboard, but it is the schooling fish, sponge encrustations and macro life that make it a particularly memorable dive. **The Gully**, near Alligator Light, offers fine schools of fish beneath coral ledges and generally good visibility. There are hard corals in high profile configuration in depths suited both to diving and snorkeling.

A diver photographs fish at the wreck of the *City of Washington*.



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Both Marathon and Key West offer airstrips able to accommodate commercial and private aircraft, whereas the Key Largo airport is limited to smaller private craft. Marathon is a well developed resort community with a wide variety of fine lodging available. There are motels, resorts, condominiums, campgrounds and interval ownership resorts; as well as numerous restaurants in both the fast food and fine dining categories.

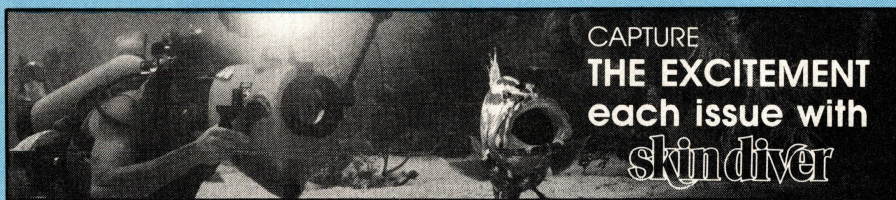
For the traveling diver, Marathon is particularly distinguished by the fine diving services available. The shops specialize in reef trips, but cater to a wider range of special underwater interests than might be common around Pennekamp. Spearfishing and shell collecting charters may be arranged to the nonprotected waters of the Middle Keys and of course underwater photography is a popular activity with all the dive operations. Scuba instruction, instructor seminars, resort courses and open ocean checkouts round out the services available.

The range of diving off Marathon is rather diverse. Some reefs will exhibit the spur and groove configuration while some will be patch reefs, concentrated in small areas and separated by fairly broad sandy areas. The deeper reefs will be characterized by large barrel sponges and clumps of coral. Beyond these generalities, some of the more popular specific dive sites are as follows:

Sombrero Reef is marked by a 140 foot lighted tower which, of course, makes it easy to find. This high visibility is one reason it is frequently visited by the dive operators and pleasure craft alike; the other reason is simply that it is a fine area to dive. The coral formations are spur and groove with winding sand channels leading seaward. Depths range from just a few feet below the surface to about 30 feet in the best areas, making Som-

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brero popular for both divers and snorkelers. The marine life likely to be seen includes angelfish, barracuda, grunts, jacks, trumpetfish, rays and a sampling of typical Caribbean creatures.

Delta Shoals is a vibrant reef in depths to perhaps 25 feet. Careful inspection of the coral recesses and overhangs will reveal the more secretive reef residents such as the spotted drum, big-eye, moray eel and on rare occasions, the octopus. On the seaward edge of the

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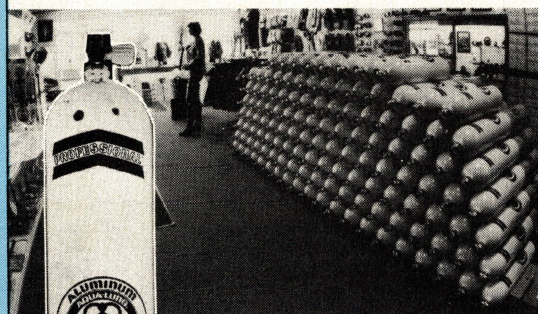
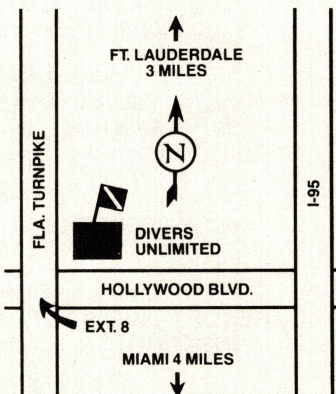


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A cruise ship docked in Key West.

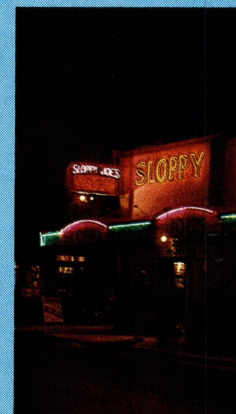
Florida Keys

reef there exists an older coral formation
in the 50-100 foot range, but while the pe-
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The **Seven Mile Bridge Reef** is actu-
ally a section of the old Seven Mile
Bridge, made obsolete by a new span
and intentionally dumped in 120 feet of
water to create an artificial reef. The span
sits upright and rises 25-30 feet from the
ocean floor making it an exciting change
of pace from shallow reefs. The dive is
subject to excessive currents at times, so
the dive shop is the best authority as to
whether it is diveable on any given day.
On good days, however, the structure is
an exciting dive: It has already attracted
great quantities of baitfish and the grou-
per and jack that typically prey on them.

Coffin's Patch is a collection of six
distinct reef areas with depths ranging
from 15-25 feet. Each area is typified by
a preponderance of a specific coral type,
but it is the large stands of pillar coral that
I remember. The reef is populated by
both juvenile and adult specimens of the
typical Florida Keys marine life.

One of the most spectacular of the Mid-
dle Keys dive sites is **Looe Key**, one of
our newest marine sanctuaries. While this
reef is visited by stores from Marathon, it
is a much shorter run from Big Pine Key
and consequently will be the primary dive
destination of stores there. The reef is
named for the H.M.S. *Loo* (also *Looe*), a
frigate of 40 to 44 guns, probably first
launched in 1706. In February 1744,
miles off her intended course, the ship
ran aground and sank near a "small
sandy key about one and one-half cables
length long and one-half broad." As the
coast of Florida at this time was populat-

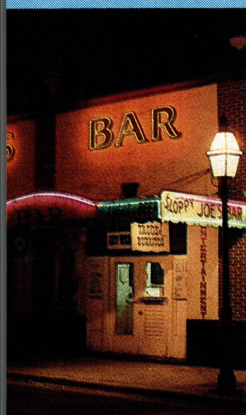


Above: Nighttime
activities are more
diverse in the Keys than
in many dive
destinations, with Key
West a center of action

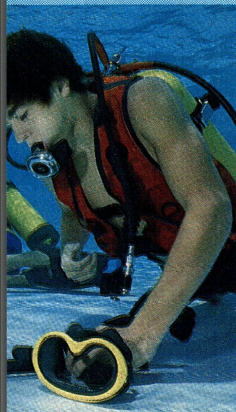




Snorkelers cruise over shallow elkhorn coral in Pennekamp Park. Much of the diving in the Keys is in depths less than 40 feet.



Below: In addition to the great diving, scuba certification courses from basic to instructor are available in the Florida Keys.



ed by savage Caloosa Indians known to murder Englishmen on sight, this put the crew in a precarious position. The survivors were further unnerved as waves swept the entire key under severe wind gusts. Fortunately, they were able to commandeer a passing sloop and escape. A hurricane has since swept the sand key away, and a 1951 salvage expedition recovered most of the artifacts from the ship. But, the coral reef bearing the name Looe Key remains as one of the treasures of the Middle Keys.

Depths on Looe Key will range from 2-100 feet, but most of the best diving occurs in 10-35 feet. The reef generally runs from east to west with numerous coral fingers extending north to south. The marine life is becoming increasingly abundant as if aware of its protected status, and includes butterflyfish, Spanish hogfish, angelfish, damselfish, moray eels, an occasional hawksbill turtle and many others. Since Looe Key achieved sanctuary status in the final days of the Carter administration, diver traffic has increased substantially. As with all the especially popular areas within the Florida Keys, visiting divers should be extra careful to place anchors properly and never touch the coral so as to preserve this very delicate reef for future generations.

LOWER KEYS

Key West is the center of population and cultural influence for the Lower Keys and probably the most historically fascinating of all the Florida Keys. Initially purchased for \$2,000 in 1821 by John W. Simonton, a profiteering trader from New Jersey, Key West (then known as Cayo Hueso or Bone Island) has ridden an economic rollercoaster of boom and bust over the years.

In its earliest history wealth poured into the city through the salvage of ships wrecked on the surrounding reefs. The unscrupulous wrecker might have helped

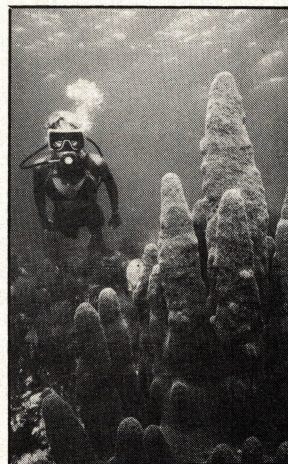
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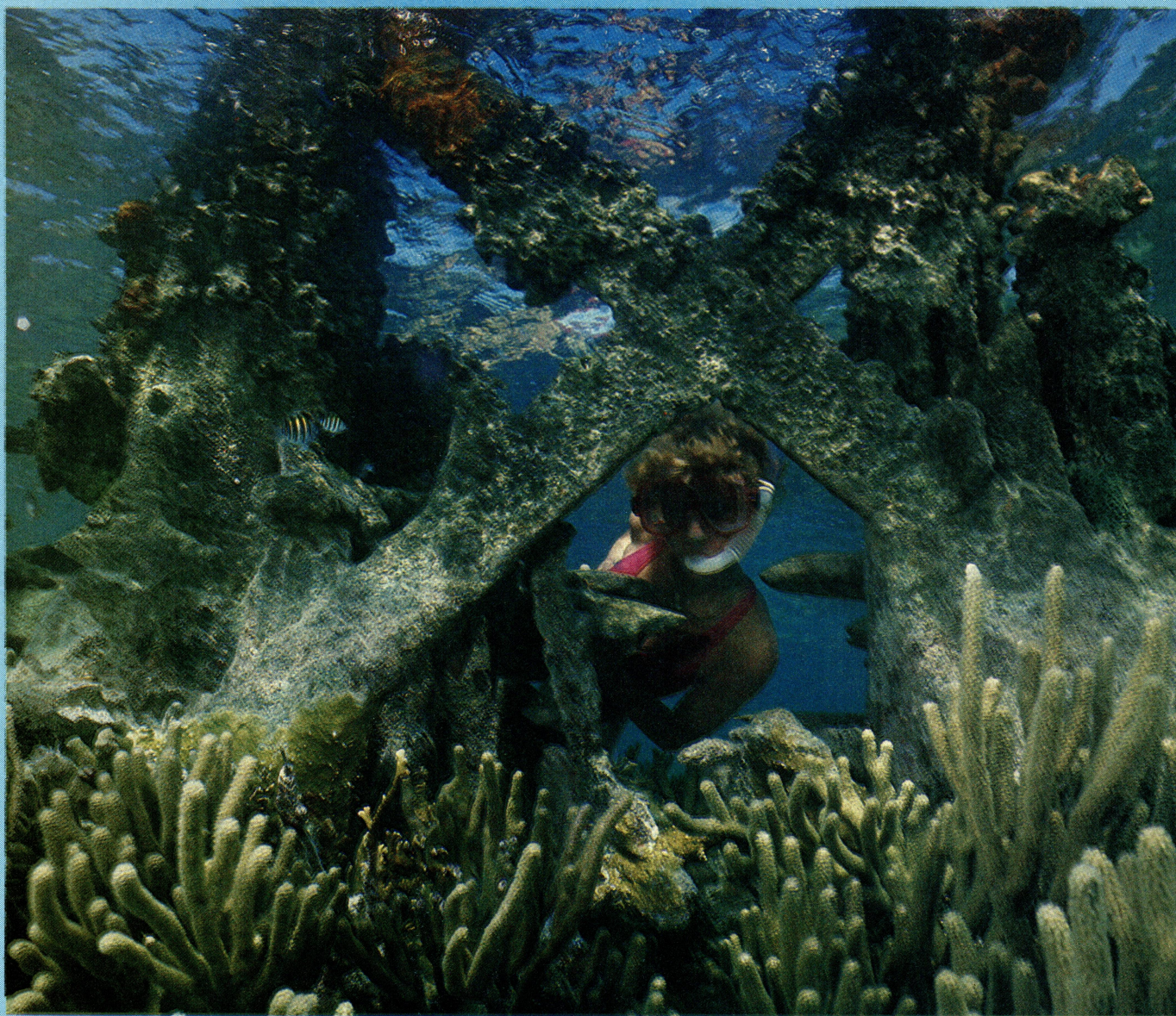
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In Florida

800-544-1010

Local

305-296-7711



Tom's Wreck, Pennekamp Park.

Western Dry Rocks.



Florida Keys

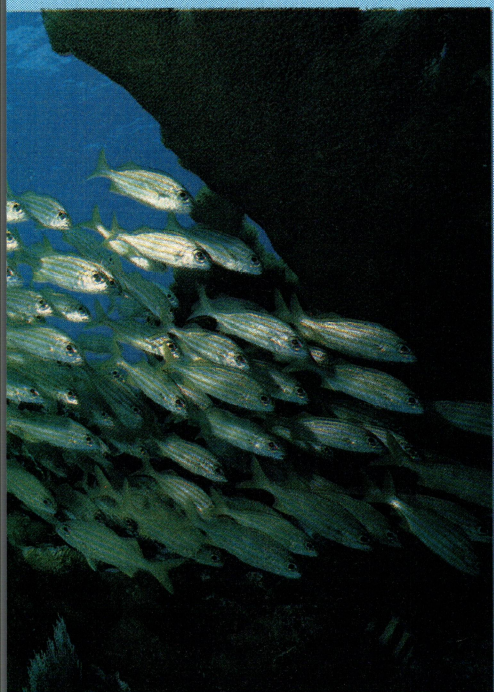
a few of those ships onto the reef, but as lighthouses were erected and warning buoys placed about the island, the wrecking industry foundered.

Next came the sponge industry, which at one time supplied 90 percent of all sponges sold in the United States. This resource was exploited and soon would not support the industry. Cigar making was influential in the local economy for a time, but not until the completion of the Overseas Highway in 1938 was the potential of tourism as a base for the local economy evident. In the single month of January in 1950 more than 54,000 motor vehicles traveled the length of the Florida Keys to Key West, and they come still.

Today they come for various reasons. Some, to tour a one-of-a-kind city, to wander narrow streets shaded by tropical trees and view with fascination the buildings rendered by ship's carpenters rather than more traditional architects. Some come to shop in unusual gift stores and galleries, while others come to enjoy the spectacularly diverse cuisine of Key West's restaurants. Some may come specifically for the casual, tolerant atmosphere so prevalent in this community. It only takes the experience of the annual Fantasy Fest at Halloween to realize that nothing is so outlandish as to shock Key West. And, of course, a substantial portion of the tourist population comes to experience the diving and snorkeling.

Sand Key is the most visible of the reefs off Key West, again because of a large lighted tower sitting on an exposed

Molasses Reef.



the Smilin' Islands

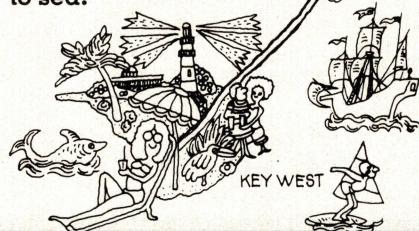
Island after enchanting island, the scenic drive through the Florida Keys to Key West is a flight on a ribbon of sunlight over the turquoise sea.

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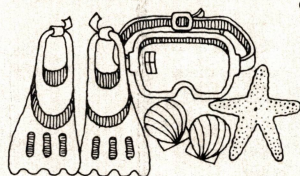
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Florida Keys

sandbar. Because of its shallow coral gardens and proximity to the docks downtown, Sand Key is a popular destination for the fleet of snorkel boats which compete for customers from kiosks at the wharfside. The more established full-service dive shops may also bring their snorkel charters to Sand Key, but the serious divers are generally taken to a variety of deeper reefs as well.

Among these are **The Sambos**. There are three Sambo reefs, Eastern, Middle and Western; and each has a unique flavor. Eastern Sambo has numerous small coral heads and ledges with enough crevices to house large populations of lobster and reclusive tropical fish. Middle Sambo has a well defined reef structure at 30 feet with a nearly vertical drop-off falling to 60 feet on the seaward edge. Ten Fathom Ledge is nearby and within this structure it is very common to see

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Keys Association of Dive Operators (KADO)

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large grouper and even an occasional shark. Western Sambo has a bottom not unlike much of the other Keys coral reefs, i.e. high profile hard coral heads adorned by seafans and populated by a dazzling array of tropical reef residents. In addition, there is a tugboat sitting upright in partial decay in about 80 feet of water that still makes for an interesting dive.

Some of the other more popular Key West dive sites include **Rock Key, Eastern Dry Rocks** and **Western Dry Rocks**. Here, again, each reef has its own personality and special residents, but in general will feature a sand bottom at 25 to 35 feet with numerous stands of high profile coral scattered throughout. Since much of the coral will come within inches of the surface, these reefs are appropriate for both scuba and snorkel. There are also numerous wrecks, visited with regularity by the Key West professional diving community. The **Wilkes-Barre**, a 600 foot World War II cruiser, is apparently quite spectacular, but can only be dived by very experienced divers owing to its 145-220 feet depth. The **Al-**

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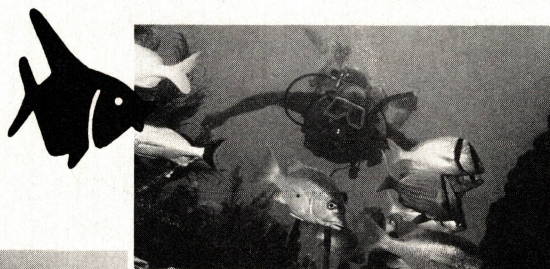
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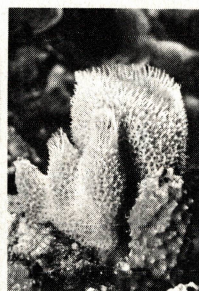
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Florida Keys

exander is a much more relaxing dive since the ship sits in 35 feet of water on the gulf side. However, this is definitely a "weather-permitting" dive as visibility is often marginal.

There are also live-aboard dive boats operating from Key West offering tours to the Dry Tortugas. A combination of diving and local conch culture in Key West for a few days, coupled with a cruise to the Dry Tortugas, is an especially appealing vacation concept and should provide some virgin dive sites.

Key West is a unique entity, unlike any other dive destination in the world. It

FLORIDA SALTWATER FISHING FACTS

Since local regulations governing the taking of saltwater products may exist, you should contact the Marine Patrol District Office nearest the location where you will be engaging in these activities.

DISTRICT OFFICES

Miami


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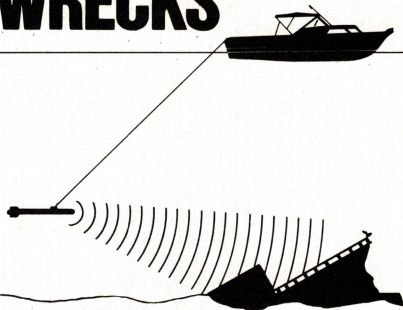
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A saltwater fishing license is not required unless products are sold in any manner. For information on the sale of saltwater products, please contact the nearest Florida Marine Patrol Office.

represents good diving, superior accommodations and local color. Key West should be especially appealing for those who seek more from a dive vacation than just diving.

The future of the Florida Keys is not clear, but the trend is one of optimism. There are big money interests who see the lure of the sea and hope to capitalize with grand real estate development and, carefully guided, this is progress. There are the traditional conch residents who have chosen the Keys as their home because of a distinct, laid-back island atmosphere and hopefully their lifestyle will remain inviolate. The State of Florida realizes that the Florida Keys exist as one of this nation's most sensitive, ecologically fragile environments and is addressing this concern with protective legislation. To divers, the Florida Keys represents one of America's last frontiers: These islands and reefs will always be special to them. 

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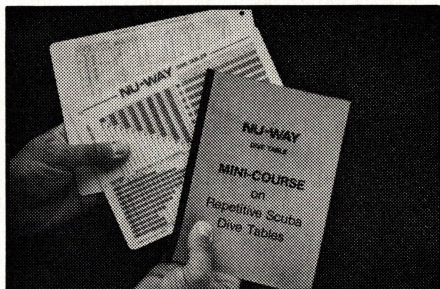
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TECHNIFACTS

(Continued from Page 16)

U. S. Navy Salvors Handbook. The 132 page book is divided into sections entitled: Damage Control, Strandings, Machinery, Rigging, Safety and Useful Information. It is intended to provide convenient, readily available guides to the various stages in operational salvage procedures. There are a great many examples of calculations for U/W problems as well as tables, graphs and other illustrations.

The manual was first compiled by Alex Rynecki, Ocean Engineers, for the supervisor of salvage, U. S. Navy, with the help of Navy divers. It is intended to serve as a guide for search and recovery operations and to assist commercial and the more advanced sport divers who venture into the fringes of commercial diving. The *U. S. Navy Salvors Handbook* will prove most useful, however, to those who must deal with ship salvage as a result of the sinking or stranding of a vessel. The sections containing instructions, examples and tables, designed for quick and easy reference, should prove most helpful in these cases.

As a U. S. Navy diving and salvage officer in the era that spawned nearly all of the papers making up this new handbook, I would like to have seen included some of the patching methods used in the salvage of the liner *Normondia* (ex-French liner *Lafayette*) and the salvage of the M/V *Gijon*. Unusual salvage techniques were developed on these jobs.

In spite of these omissions this small handbook with waterproof and tear resistant pages will be found useful by a large number of divers in both the commercial and advanced sport diver categories. The pocket manual is available directly from Best Publishing Co., P. O. Box 1978, San Pedro, CA 90732. The price is \$14.50 plus \$1.50 postage and handling.

SANDBLASTING SCUBA CYLINDERS

It was pointed out in an earlier Technifacts that conventional tumbling of diving cylinders did not always remove corrosion products from deep pits in the tank. It was further suggested that a method of internal sandblasting might be developed that would solve this problem. Later we received a letter from a Pennsylvania dive shop stating, "I am writing in response to your February 1984 article in which you say sandblasting is most effective for internal cleaning of steel tanks. You went on to say that no one had yet developed a sandblasting method for diving cylinders. Well, we have."

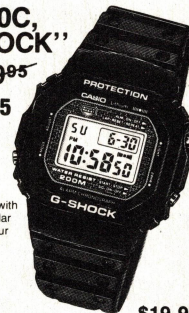
As reported by the dive shop two methods of internal sandblasting are used. "First, we use up to 500 psi air supply and run this through a standard Sears

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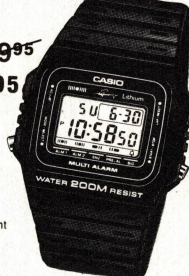
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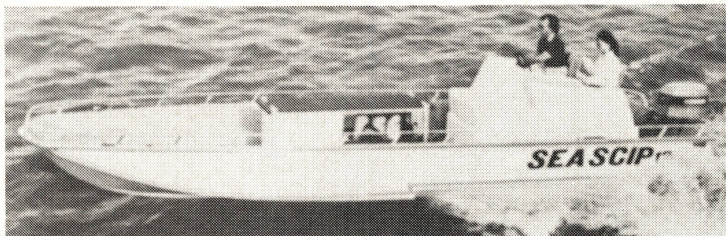
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TECHNIFACTS

sandblaster. The tank is rolled across a plywood board while sand is shot into it. One or two blasts are sufficient to remove most surface oxidation and the rust in pits. A pit's size can then be more accurately determined by its shadow."

The second method as described by the dive shop was to install an extension tube on the end of the sandblasting nozzle. This allows a more direct cleaning action into any deep pits that may be present. Following both cleaning methods the tank is inverted and blown clean with 500 psi air. The dive shop operator added, "If using both these methods of cleaning leaves some corrosion in extremely deep pits that can't be cleaned, the tank is failed."

The writer also stated that areas near the neck of the tank that are difficult to see and inspect in a VIP, can be checked with the finger to detect any major corrosion problems.

ONE ATMOSPHERE MANNED DIVING RIGS

JIM suits, probably more accurately termed flexible diving bells, have apparently solved the two most important criteria for the ideal diving apparatus; i.e., be able to resist external water pressure at great depth while operating at one atmosphere of internal pressure and letting the diver move about unaided.

While JIM is probably the best articulated diving bell to date, there were many units before JIM: Some quite successful and some total failures. The first known armored apparatus that enjoyed limited, and dubious, success in 1715, was little more than a rigid, barrel appearing device with arm holes and leather sleeves. During the next 200 years many metal, and some wooden, diving dresses were invented, tried and relegated to the list of failures, some of which resulted in the death of the operators.

Taylor, in 1838, developed the first articulated diving dress which was, in one way or another, copied by most subsequent designers. An American inventor, Phillips, in 1857, designed a much improved diving suit not too different from JIM in appearance. Up to this point, the operator's air supply was from hoses from the surface. Air was exhausted back to the surface through a second hose to retain the one atmosphere pressure. By 1910 the breathing apparatus in use was of the oxygen regenerative type.

In 1913 German designers Neufeldt and Kuhnke developed a successful articulated dive suit. Following WW II, this apparatus was acquired by the British as

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a war claim from the Germans and they continued with the testing of the unit.

One of the successful designs following the Neufeldt and Kuhnke rig was developed by J. S. Peres in 1922. Improvements were made in the joint design and additional patents were obtained on this diving dress in 1933. The Peres suit was used successfully in the mid-1930s to locate and investigate the wreck of the *Lusitania*, torpedoed and sunk by the Germans in deep water off the coast of Ireland on May 7, 1915 with the loss of 1,198 lives. The dives made on the *Lusitania* were made by Jim Jarrett. Thirty years later the Peres suits were developed for deep offshore work and were called JIM II suits in honor of Jarrett.

There were two principle differences between the Neufeldt and Kuhnke and the Peres rigs. One was the method of ballasting; the other the design of the flexible joints. In the Neufeldt and Kuhnke dress ballasting was done by letting in and expelling water. The Peres (and the JIM suit) is ballasted by the use of external weights that can be dropped by the operator if necessary. The Neufeldt and Kuhnke suit has ball bearing joints; the Peres suit, fluid filled joints. The Neufeldt and Kuhnke diving rig is famous for having been used successfully in locating the liner *Egypt* in over 400 feet of water. It carried several million dollars in bullion.

With the success of JIM rigs, others were developed. The SAM suit is a version of JIM but with greater depth capabilities. Then came the WASP which is designed for midwater use and is maneuverable by the use of thrusters but has only articulated arms. These are equipped with manipulators. The OMAS, developed by Vickers Slingsby in 1978, is also more closely related to a diving bell with articulated arms and hydraulically powered manipulators. The *Mantis* is more a manned, tethered submersible than an articulated diving rig.

Next month Technifacts will present some of the highly technical jobs that have been performed by these rigs, some at great depths, as well as some of the hazards, advantages and disadvantages that have been encountered in the use of these diving suits. Be with us. ➤

VAN DE POL/WENOKA

Herb Van de Pol has been appointed to the Wenoka Cutlery management team. His main responsibility as Wenoka's telemarketing merchandising consultant will be to share his expertise with dive shops, enabling them to bring Wenoka's products to divers.

Van de Pol brings to Wenoka his 22 years of involvement with the diving community; as an instructor for Los Angeles County and in the south Florida area and also as an owner and manager of dive shops in Florida. ➤

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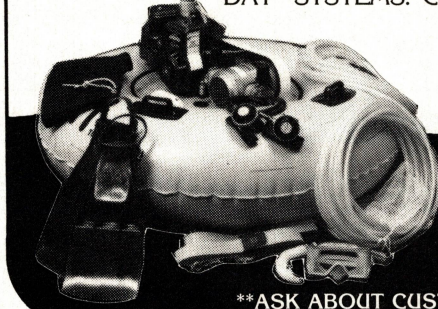
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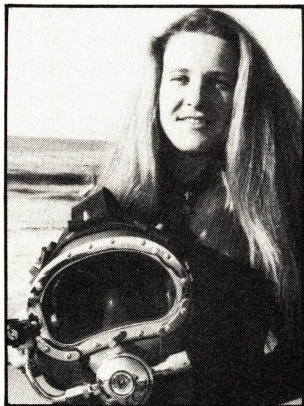
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PATTERSON TO DSI

Laura Patterson has joined the staff of Diving Systems International in Santa Barbara, CA. DSI manufactures the Superlite 17 Helmet, the Heliox 18 band-mask and the Dive Control System-1.

An avid diver, with an educational



background in marine science, Patterson will assist marketing manager Steve Barsky. As sales assistant, she will also maintain the order desk, answer sales inquiries and work with production manager Steve Kushner in processing all orders of DSI equipment.

NAUI MANAGER

Judy Friedel is now the NAUI Southwest Branch (Region 6) manager. She lives in Richardson, Texas and will handle NAUI affairs in that state plus Colorado, New Mexico, Oklahoma, Arkansas, Mississippi and Louisiana.

President of a family corporation, Friedel has been a certified NAUI Instructor since 1972. She has been extremely active in IQs, has been on staff and course director for ITCs and crossovers, organized and served as leader of a NAUI Dallas Chapter, has led dive trips, raised \$5,000 for additional funding of the Greenstone Safety Award and has won numerous awards for her underwater photography.

UNDERWATER RECORD

In mid-July divers will attempt to break two long standing underwater duration records. One set of divers will remain submerged continuously for 96 hours, while another group will be allowed half an hour on the surface every six hours during their 240 hour attempt.

These two new world records are to be attempted in Marineland's Baja Reef (Los Angeles) two weeks prior to the Olympics. The event is designed to be a major promotion for scuba divers everywhere and will be attended by celebrities and visitors from around the world.

All proceeds will go to the United Way.

Male and female divers who consider themselves mentally and physically competent, and are willing to be trained in the use of specialized equipment, are urged to contact Lyn Freeman at Malibu Divers in Los Angeles (213) 456-2396.

COLORADO CHAMPIONSHIPS

The 27th Annual Colorado Diving Council Skin and Scuba Diving Championships will be held August 25-26 at the public boat dock, Grand Lake, CO. Events will include a treasure scramble, obstacle course, underwater swim, underwater navigation and others. Trophies, plaques, medals and prizes will be awarded. Individual and team participation is open to all certified divers.

For information and/or registration contact Jeryl Voegtly, Box 620356, Littleton, CO 80162.

SILVERBERG/BOTTOM TIME

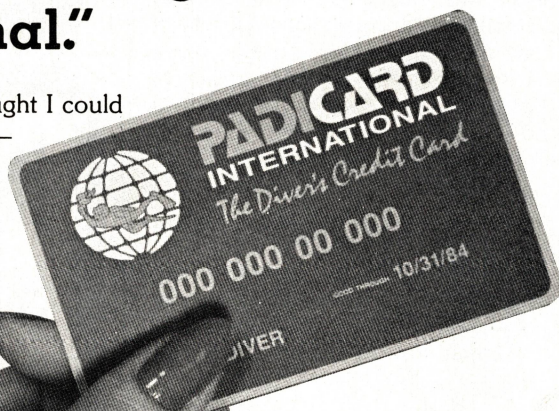
Stephen Silverberg is the latest addition to the crew of the *Bottom Time*. Silverberg, formerly of San Diego, is a dive-master and emergency medical technician. He has extensive experience aboard dive vessels on the West Coast and throughout the Bahamas. Silverberg is also an instructor in fire fighting and rescue techniques.

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SECTION

South of the Bahamas, under the vault of a cloudless blue sky, lies a truly undiscovered island chain known as the Turks and Caicos. The islands are low in profile and irregular in outline. Along their western edges are scalloped coves with broad beaches of fine white sand. There are no big hotels, no traffic, no hordes of tourists, no shopping malls.

In downtown Grand Turk, we walk the somnolent main street relieved not to find the customary bustle of larger tourist islands of the Caribbean. In the sleepy pace, the tiny population, the feeling that civilization's hobnailed boots had never been heard here, my too-traveled soul found a brief quiescence and loved it.

That feeling extended outward from shore as well. For miles I explored the reefs. A long, sandy shelf ran outward from shore; about a quarter mile out, the sand abruptly ended in a soaring bastion of coral wall that rose to within 30 feet of the surface, then plunged to the abyss. And, best of all, I never saw another dive boat in an entire week.

I was in the Turks and Caicos to inaugurate service on the Caribbean's newest and finest dive boat, the 65 foot motor sailer *Sir Cloudesley Shovell*. This clean, spacious vessel totally belies rumors I've heard that somehow sailing vessels don't make good dive boats.

Nonsense. For groups of four to six divers (or up to eight using the saloon) *Sir Cloudesley Shovell* is one of the finest dive boats in the world today. In fact, no boat has ever been so popular with divers returning from their adventure. The boat, captain, crew, food and diving have all been getting raves. The experience of *Sir Cloudesley Sho-*

TURKS AND CAICOS

An Undiscovered Paradise



TEXT AND PHOTOGRAPHY BY CARL ROESSLER

vell is a textbook example of what constitutes a great diving vacation.

It starts, of course, with the boat, your home away from home during your week in the Turks and Caicos. This boat is a marvel. Her three private double cabins are wood paneled, spotlessly clean and each features a private washbasin and mirror!

Her saloon/dining area has a massive table and upholstered, comfortable seating. She offers hot water showers that really work, clean linens and the small amenities that are so im-

portant when you are thousands of miles from home.

Most unusual of all, her decks are open and uncluttered, with loads of space for suiting up or lying about. Her captain, Bob Gascoine, has long experience with dive groups in the Mediterranean and his transition to the Turks and Caicos has been flawless. This is a professionally-run ship, without question—Bob is a stickler for getting it right the first time and he also understands many diver's compulsion to spend all day in the water. Unlimited

(Continued on Page 98)

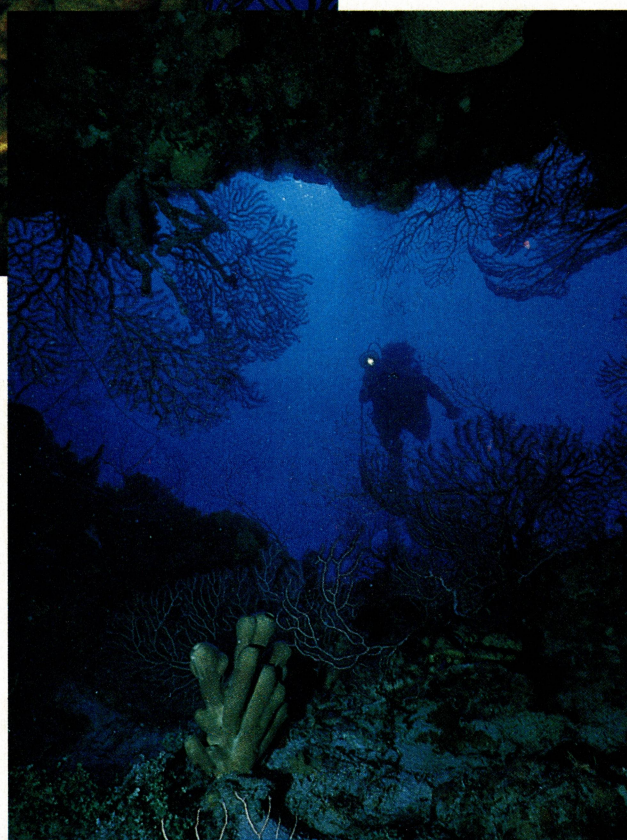


Cayman diving offers canyons and caves, drop-offs and pinnacles. Left: Yellow sponges provide excellent photographic opportunities. Below: A cave with gorgonians.

When two of my favorite Grand Cayman professionals became partners late last year, their joint venture raised more than eyebrows in the sporting community. In fact, during the few days I spent with Dave Miller and Capt. Bryan Ebanks, while Dave and I were searching for eagle rays, Capt. Bryan was trolling for blue marlin on the Banks 10 miles west. Both boats had luck which defied the ides of March: We saw rays and Bryan raised five marlin.

Unlikely seabedfellows? Perhaps, but these enterprising Caymanian sportsmen have established a very unusual Caribbean watersports operation designed to provide customers with a variety of *personalized* options during their vacation.

Calypso Divers is Dave Miller's domain. Just north of George Town, on the waterfront of North Church St., next to Capt. Bryan's Seafood Restaurant, Miller's dive shop is the closest one to the island's capital, sharing space with Capt. Bryan's restaurant and sportfishing headquarters. This modest, yet well-stocked shop is



photos/Geri Murphy

the new base for Miller's Calypso Divers operation. His fleet of three boats is moored out back, alongside the recently completed 150 foot wooden dock.

An easily recognized Cayman dive industry personality, Miller has been in the business in these islands for 15 years. He worked as both divemaster and instructor with several well-known local operations before establishing his own independent, full service dive operation in 1982. (His last name betrays his Caymanian heritage—it is a name synonymous with seamen and boatbuilders.)

Miller caters to visitors staying at Beach Club Colony, Plantation Village condominiums and Caribbean Paradise apartments, three of Grand Cayman's top properties. Each offers packages for guests wishing to dive with Calypso. This means that Miller's customers have a variety of vacation options, from a complete full service holiday in a charming, small hotel on Seven Mile Beach (Beach Club Colony), to self-catering vacations in modern, luxury units at Plantation Village (also on Seven Mile Beach) or Caribbean Paradise, on the island's secluded south coast. Regardless of where customers roost, Calypso offers free transportation to and from their quarters in a comfortable, air-conditioned van.

What isn't flexible about Calypso is the emphasis on keeping each customer satisfied in his/her quest for excellence in diving, whether his/her interest is photography or simple critter hunting.

The Calypso fleet includes a 26 foot flattop; a 26 foot V-hull and a 38 foot custom dive boat with full facilities, comfort-

able and equipped for making longer runs to the North Wall, south coast and even all day trips to the reefs and drop-offs of East End. On the smaller boats, groups are limited to 10 people.

"Each dive trip depends on what the customers want to see and their reason for diving. Photographers will have different expectations and needs, so we try to keep them together. Since our groups are small, there is plenty of room for camera gear and no chance of divers being crowded either above or below water," Miller said.

Calypso's philosophy of operation is "as much assistance as the customer wants," Miller added. "We'll set up your tank, help you into your gear, lead and guide the dive—whatever you want. Just ask. But, if you want to do it yourself, we'll respect that too. We don't ask you to do our thing—we want to help you do your thing. That's Calypso's motto. Our only inflexible rule is safety and no decompression diving. If you're a deep freak go elsewhere," he said.

Customers are transported to the dock in time for the morning two tank dive, which departs at 9:00 am. The afternoon one tank dive leaves at 2:30 pm. During the surface interval, Calypso customers have a comfortable roost right on the premises if they don't want to return to their resort. That's another unusual feature of Calypso's operation.

Sharing space with Capt. Bryan's seafood and sportfishing headquarters means guests can enjoy the newly completed sundeck; wooden picnic-style dining area outdoors; or air-conditioned inte-

rior furnished in a nautical theme, including photographs of some of Capt. Bryan's more memorable gamefish hauls of the past few years. His small seaside dining spot was specifically designed to be compatible with Dave's dive operation.

"We wanted to create a small, resort-type atmosphere close to town, catering to the diving community. Although we have no accommodations, we do have changing rooms; a very informal outside dining area so divers don't have to change to be able to eat between dives, and, if they want to change, shopping and limited sightseeing are a short walk away in George Town. They can spend the whole day here and find plenty to do," Bryan explained.

Although Capt. Bryan admits "his passion is sportfishing, his talent as a chef skilled in preparing local native dishes such as Solomon's Cup (a fish chowder) and Cayman style lobster and wahoo keeps him in demand ashore, catering to his customers. His weekly noon barbecues are very popular, too.

Capt. Bryan's 34 foot *Tashara I* sportfisherman is the source of his seafood menu, which features fresh local dolphin-fish, wahoo, tuna and other fish. The custom boat is available for charter by the half day or full day for trips pursuing the elusive blue marlin and other prized fish common in Cayman waters.

The combined inside and outside dining areas will seat 100 people. Although less than six months old, Capt. Bryan's is already attracting repeat clientele because of its reasonably priced food.

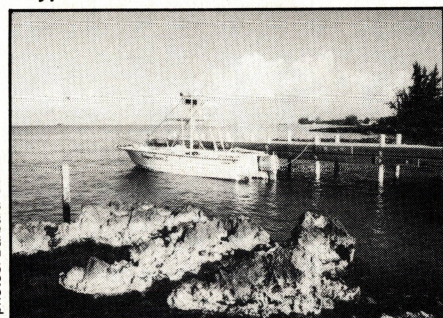
What's that to do with a dive opera-

CAYMAN'S Calypso Divers

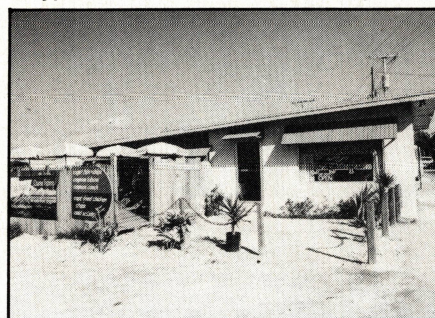
A different beat in the islands

BY BARBARA A. CURRIE

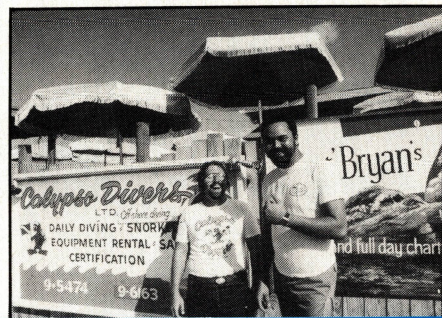
Calypso Diver I



Calypso Divers is next to Capt. Bryan's.



Dave Miller (left) and Bryan Ebanks.



photos/Barbara Currie

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CALYPSO DIVERS

tion? It is the Caribbean's first "dive and dine" package. Calypso offers clients an exclusive money saving option which Dave and Bryan have dubbed the "dive and dine" plan, custom-made to give divers a 15 percent discount on the total bill for lunch and dinner at Capt. Bryan's during their stay. This is convenient for those making both dives daily, who don't want to return to their resorts for lunch.

Both Caymanian partners emphasize, however, that there is no conservationist's conflict in their venture. "We're not interested, nor do we permit, bottom fishing or spearfishing on the reefs. In fact, we have been actively feeding the fish in the shallow area beyond our dock and many species are returning. Deepsea fishing does not affect the species which appeal to divers. Furthermore, the most important gamefish, the blue marlin, are now being released here in the Cayman Islands. We only keep what the restaurant can use.

In fact, many divers opt to cancel a half day of diving and charter *Tashara* for a morning or afternoon, lured by the excitement of chasing billfish.

"We think we have an unusual combination to offer diving vacationers—a kind of symbiotic business venture which we've built to be unpretentious, friendly and more important, versatile. But, above all, we have tried to make it as convenient for divers as possible," Miller said.

Calypso is the only complete dive facility in George Town, and is just two blocks north of the cruise ship dock. Passengers on the major cruise lines which call at Grand Cayman each week can contact Calypso for equipment rental and shore dives or, if time permits, boat dives, provided they show C-cards. The shop stocks new rental gear for 30 divers, including new Sherwood Magnum regulators with depth and pressure gauges.

A Mako 15-K compressor services Calypso's 100 aluminum 80s and divers can pick up their tanks and prepare for shore dives right in back of the shop. The area has been cleared and the ironshore cut away and filled with sand to allow for safe, easy entry to the shallow reef area.

One of the west coast's most popular dive sites, the wreck of the *Cal*, lies just 100 feet offshore in 20 to 30 feet of water. The wreck was once a 100 foot freighter which ran aground during a storm in 1948, loaded with a mixed cargo which included quantities of rice.

Calypso divemasters have been feeding the fish in the area to attract large schools of juveniles and according to Miller, the fish are coming back "by the dozens" to the site.

Although the shore diving from Calypso headquarters is excellent, the opera-

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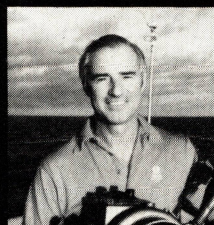
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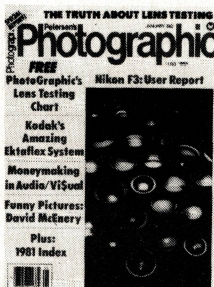
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CALYPSO DIVERS

tion is convenient to all west coast dive sites, including such favorites as Trinity Caves, Orange Canyon and Sentinel Rock. This is a huge coral pinnacle which rises to within 90 feet of the surface, surrounded by canyons at the drop-off's edge which are overgrown with gorgonians and sponges. This site, Miller says, is, "impossibly beautiful, like trying to describe the Mona Lisa."

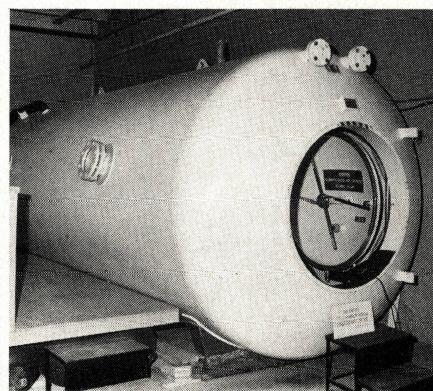
The custom 38 foot dive boat, which can carry up to 16, ventures to distant sites along the island's eastern tip, for all day trips with a minimum of eight divers. This is another attraction of Calypso: access to seldom dived areas on small, personalized excursions.

Calypso Divers plans to remain a small operation, in order to continue offering custom-made dive vacations for Cayman enthusiasts, Miller said.

If you want to try this unusual combination of services, where you can have your fish and eat it too, contact Calypso Divers Ltd., 8585 Stemmons Fwy. Suite 103N, Dallas, TX 75247. In Texas call (214) 631-4388; outside Texas, (800) 527-2502. On Grand Cayman, call 96163 days and 95474 nights.

UNH CHAMBER

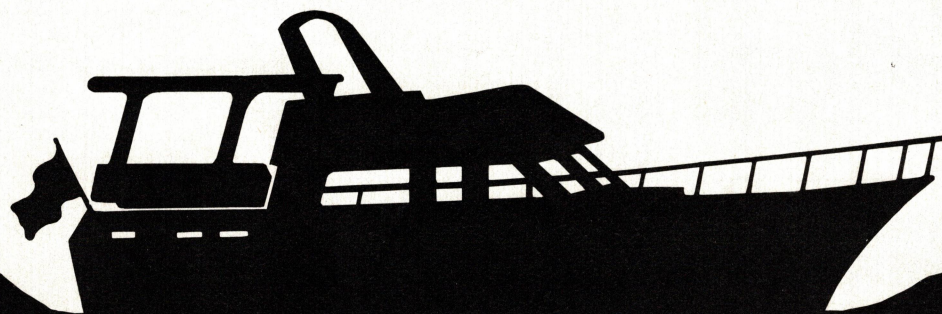
Northern New England divers got some extra health insurance recently, thanks to a major new facility at the University of New Hampshire. Certified by DAN, the Divers Alert Network, the UNH/ New England Hyperbaric Center has opened its doors to receive and treat diving accident victims. The only facility of its



kind in northern New England, it will cover the area from Cape Cod to Canada.

Part of the UNH Marine Program, the center contains a 21 x 8 foot decompression chamber capable of bringing injured divers down to the underwater equivalent of 165 feet. The eight ton chamber recreates the pressure conditions of a particular dive and then slowly brings the injured diver back to surface conditions in a controlled ascent.

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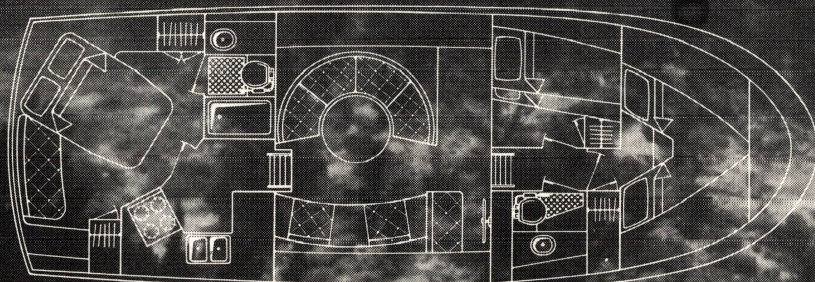
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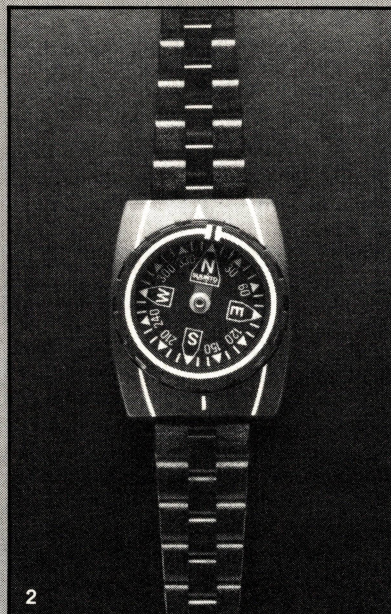


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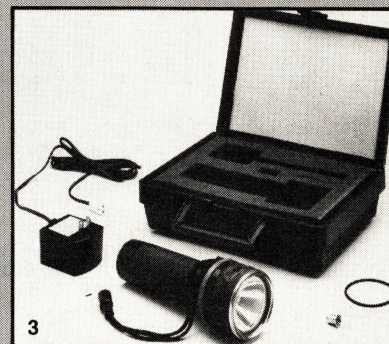
1984 SUMMER SHOPPER'S GUIDE



1 Dive Light—The Scubapro Macro-light utilizes three C-cells and produces an intense, tight beam that lasts for hours. A slight twist of the reflector collar turns the light on and off. A double O-ring seal provides leakproof operation throughout sport diver depth range. Light has a knurled handle and belt clip. \$19.

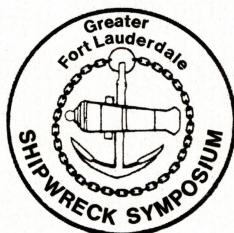


2 Dive Compass—The Suunto R-81 wrist compass is small and ideal for outdoor sports, including diving. Submersible to 300 feet, the phosphorescent numbers are easy to read in low light conditions. Movable bezel marks the heading. Comes with an adjustable strap and plastic case. \$15.99. SeaQuest.



3 Rechargeable Light—The rechargeable UL8A dive light is now available with a travel pack including light, charger, spare krypton bulb, spare O-ring and padded plastic case. The UL8A provides over 100 minutes of light on a 7-8 hour charge. The travel pack (catalogue item 7024-00) is \$90 at Dacor dealers.

The products listed in Shopper's Guide are those which the editors feel are of interest to readers. All specifications and claims are supplied by the manufacturers or sellers, who bear responsibility for their accuracy. It is impossible for SKIN DIVER to obtain samples of all products listed for evaluation and verification of manufacturer's claims. This listing is provided as a free service and vendors of U/W equipment are invited to submit information and black and white photos for consideration.



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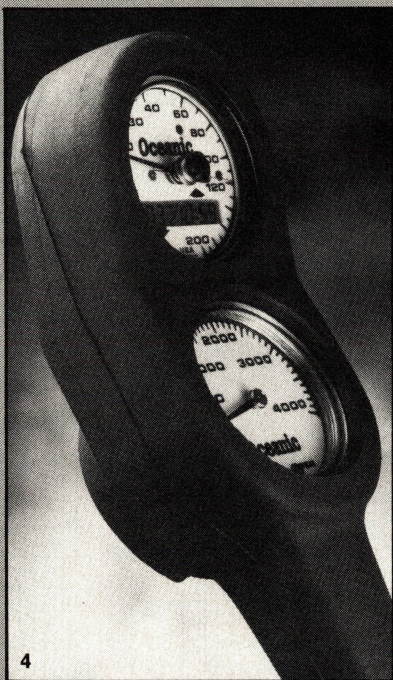


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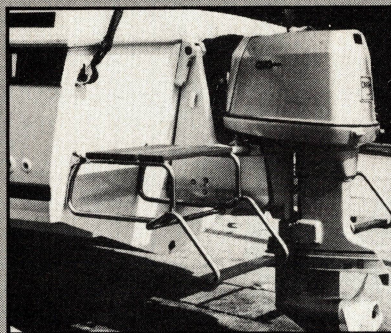
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4

4 Timer/Depth Gauge—The Oceanic Data Max shows: bottom time (digital), present depth (analog), maximum depth (analog), surface interval (digital) and dive counter (digital). The Data Max is available in wrist (\$136), double face combo (\$199) and navigator console (\$239) models. Module alone is \$121.



5 Dive Platform—Constructed of teak wood and stainless steel Step-“On” dive platforms can fold out of the water. Easy installation and convenient two pin removal. A patented design available in a variety of sizes. The 22 inch wide model is \$319.95. Step-“On” Inc., P.O. Box 1116, Fort Pierce, Florida 33454.

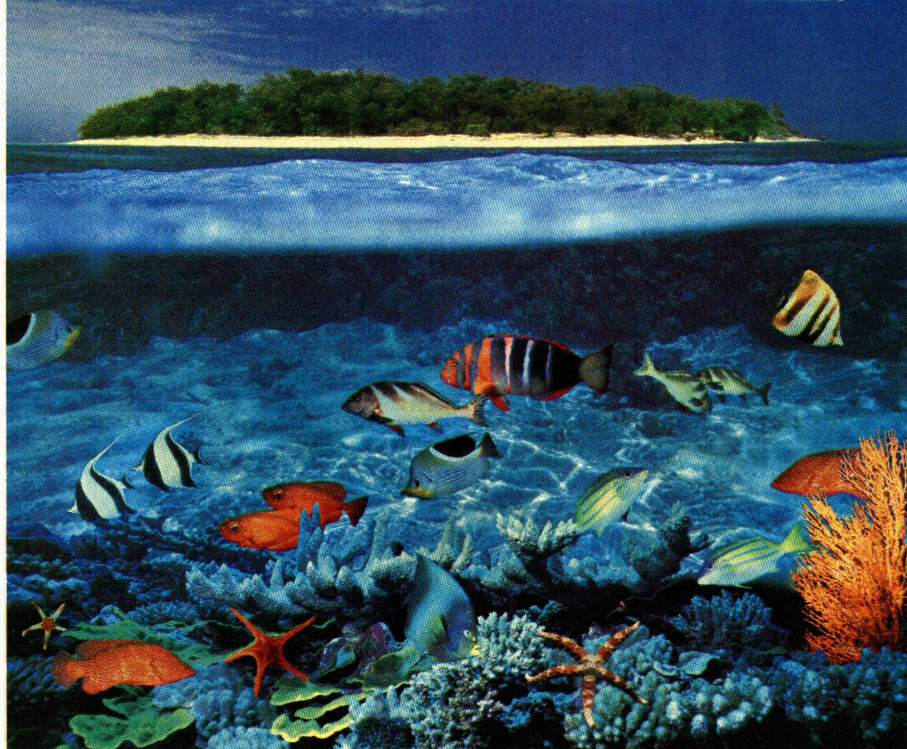
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6

6 Instructional Cassettes—By Roger Allen, Ph.D. and Tom Griffiths, Ed.D., two cassette tapes (four 30 minute segments) present a reliable program for reducing stress and improving U/W performance for divers. \$19.95. From New Century Publishers, Inc., 220 Old Brunswick Rd., Piscataway, NJ 08854.

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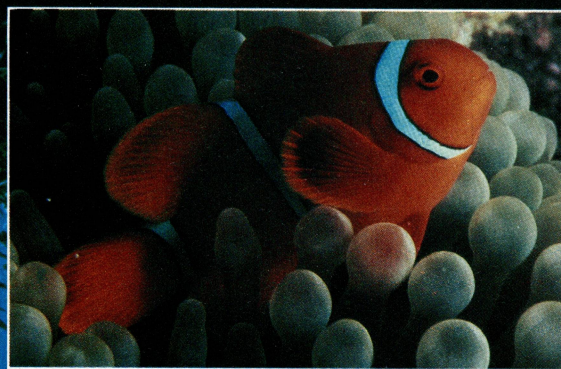
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Heron. It's just a drop in the ocean.



photos/Amos Nachoum



BY MARK H. DORFMAN

I went to Australia seeking a new experience. I found it and much more. For in those waters beneath the southern cross I encountered an unpolluted and uncharted world I had thought long vanished.

Our expedition, a unique voyage of discovery organized by La Mer Diving

Seafari, Inc., of New York City, toured some familiar sites but focused on previously unexplored and still unnamed locations in the Coral Sea. Hundreds of miles from shore and well beyond the Great Barrier system, we visited parts of Abington and Tregosse reefs previously undived.

La Mer's president is Amos Nachoum. While researching the northern Queensland coast to develop a unique Australian program, Amos discovered *Coralita* and Captain Walley Muller. Muller has been navigating and studying the Coral Sea professionally for 30 years. He is also the *Coralita*'s owner; an experienced diver and one of Australia's most knowledgeable guides to the Coral Sea.

The Coral Sea environment is extraordinarily complex; diving conditions can change with the tide. The Great Barrier system transects the tropic of Capricorn and lies in two regions—the cooler temperate zone to the south and the equatorial torrid zone to the north. Its different

LA MER TO THE CORAL SEA

climates attract different creatures.

La Mer voyages start at Yeppoon, allowing visits to Marion and southern reefs. They then cruise north toward Lihou, Moore and other northern reefs before heading back toward Australia to dive the wreck of the *Yongala*. The trip terminates at Mackay or Townsville, avoiding a rough, 20 hour sea voyage south and saving a full, precious day for additional diving. On these La Mer expeditions, *Coralita* travels at night to conserve dive time. Diving begins before breakfast and continues into the night (our group averaged over 40 day dives and 6 night dives). The *Coralita*'s crew works 18 hour days, plus shifts on watch.

La Mer/Australia programs include air, land and sea arrangements. International and domestic air arrangements are made by Qantas, the national carrier. Services are available from Los Angeles or San Francisco, using the comfortable 747 SP, with stopovers (at no extra charge) in Honolulu, Hawaii or Papeete, Tahiti. Domestic air arrangements are made via Trans Australia Airlines (TAA) using the new Airbus 300. Through years of experience, both airlines have proved reliable, courteous, considerate and helpful.

La Mer/Australia expeditions start in Sydney, where we enjoyed a brief one and one-half day tour of Sydney in order to best use the time needed to recover

from jet lag. This time was spent exploring the beautiful capital city of New South Wales on Australia's east coast. We were chauffeured throughout Sydney in comfortable limousines (once in a white Rolls Royce). We stayed at Sydney's posh new Regent Hotel where fresh-cut orchids graced our rooms. We dined at fine restaurants, cruised Sydney harbor, toured the opera house, and played with koalas and kangaroos at a private zoo before flying north to Rockhampton and transferring to *Coralita* at Yeppoon.

Our first morning's dive brought our first meeting with sea snakes. Up to five feet long, these marine reptiles are an imposing sight. Sea snakes are poisonous. Their bites can be fatal. They have no fear of anything. Yet, Amos assured us they are docile, playful creatures.

Capt. Muller and the crew of *Coralita* (two hostesses and two seamen) have extensive experience with sport diving and underwater photography. They have been taking divers throughout the region for almost 15 years.

The fish of the Great Barrier Reef and the Coral Sea are varied and plentiful, ranging from tiny blennies to giant Napoleon wrasse, 200 pound Queensland grouper and seven foot whaler and silver-tip sharks. Other shark species including hammerheads and tigers are also occasional visitors. Colonies of delicate anemones (with every variety of clownfish) and hard and soft corals brighten pinnales and bommies. Also commonly found are countless colorful varieties of crinoids and exotic mollusks including giant clams, octopus and squid or cuttlefish.

Amos has extensive knowledge and deep respect for sharks. He has hand fed them in the Red Sea, and dived among them all over the world. "The shark is the king of the sea but he will share it with us," says Amos. At Lihou Reef, he taught us to dive with the sharks.

The twin-diesel powered 79 foot *Coralita* is ideally suited for the unusual extended La Mer style of voyage. With her 20 foot beam, desalinator and air conditioning, she is a comfortable and sturdy vessel, certified for international cruising. *Coralita* has six double air-conditioned cabins (two with double sized bunk and private head and shower); a large saloon-dining area; more than ample deck space for sunbathing and dive equipment storage; two compressors; an air bank; and plenty of scuba tanks. Denise Muller, the lovely wife of the captain and gracious hostess of *Coralita*, transforms home cooking into *haute cuisine*. In her well equipped galley, she draws on the ocean and three on-board freezers for raw materials. Home baked breads, exquisite soups, beef Wellington, roast lamb, fresh tuna (prepared both as sashimi and fried in a light, delicate batter) and

such special Australian delicacies as job fish or corned beef and "damper" (a sweet and moist pan bread) made every meal a special occasion. Denise always prepared elaborate, exquisite desserts. But a greater nighttime treat was often provided by the ocean and the reefs.

The Coral Sea offers spectacular night diving. In its crystalline visibility, dive lights transform the ocean into an iridescent wonderland. One night Amos found a lionfish. These colorful creatures with their waving, wing-like fins are beautiful to look at. But their dorsal spines contain a poison more virulent than cobra venom. Amos showed us they can be handled as he skillfully posed the fish for photographs. Back on board *Coralita*, a rare, poisonous blue ring octopus emerged from an "empty" shell. It was quickly returned to the sea.

Our other night finds included several rare mollusks (including cones and volutes) as well as the brilliantly colored soft corals and polyps for which the region is best known. Hostess Diane Widdowson, our frequent diving companion, proved extremely helpful in finding unusual marine creatures.

Each day Amos and Walley consulted us and conferred with each other about the best course. We visited two more previously unexplored sites. One of these, a part of Mid Reef in the northern section of the Great Barrier system, provided totally unexpected excitement when we found it to be the beautiful, lively home of many rare and exotic species of fish.

Coralita returned by way of Stone Haven Anchorage in the peaceful Whitsunday Island resort region. We cruised south through Sid Harbor, where the American fleet assembled before the WW II Battle of the Coral Sea, continuing past Dent and Pentecost islands.

Future La Mer trips will follow similar routes. Four expeditions are planned in 1984. All will include 12 days of diving (18 day trips) visiting several outstanding reefs, including some of our newly discovered sites. The four 1984 voyages will be led by Norine Rouse of Florida, Dee Scarr of Bonaire, Gale Livers of Ikelite Photo Systems and by Amos himself.

In the Great Barrier and in the Coral Sea you can still explore spectacular reefs which have not been devastated by pollution, fished to near extinction, or shattered by flotillas of careless predecessors. La Mer and *Coralita* provide the ideal way to see them. They make getting there a delightful part of the adventure. They make being there a source of memories that will last a lifetime.

For further information about departure dates, group charter arrangements and prices contact La Mer Diving Seafari, Inc., 823 United Nations Plaza, Suite 810, New York, NY 10017. ✉

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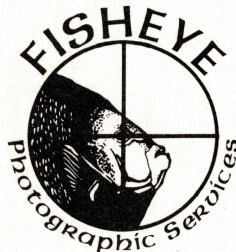
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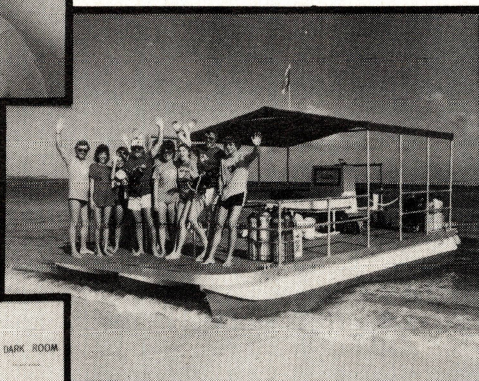
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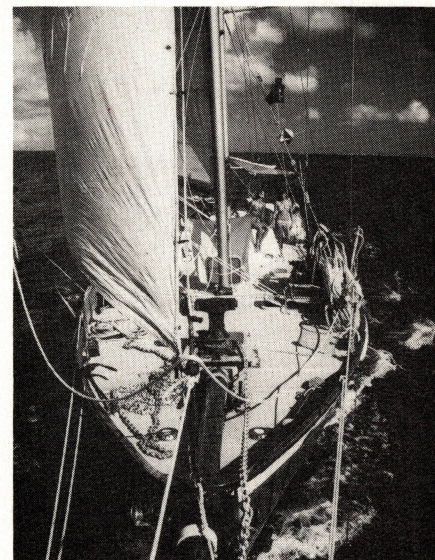
TURKS AND CAICOS

(Continued from Page 87)

diving means precisely what it says aboard *Sir Cloudesley Shovell*. You may dive *anytime* you wish. As Bob says with a wink and a shrug, "Well, the water is right there over the side isn't it? And, I'm always anchored on a good dive site. Why not offer really unlimited diving?"

Bob's crew, two perky young ladies named Jill and Cindy, prepare meals so sinful one really must dive all day to burn off the calories. Cindy also adds an entirely different dimension because she is marine biologist as well. For those who wish, every week aboard the *Cloudesley* is a marine biology seminar during which you can eat until you burst. What fun!

One of the highlights of a week aboard



the *Cloudesley* is a beach picnic at Sand Cay, some miles south of Grand Turk. After a two hour sail, we dropped anchor off one of the most spectacular beaches I've ever seen. While Jill and Cindy built the fire and began cooking, Bob and I climbed an old metal lighthouse to take pictures of the islands. Under the brilliant blue of the sky, the blue-green water and blazing white of the beach made for an absolutely unbelievable panorama. And, to top it off, from the lighthouse as we looked down upon the beach, Bob showed me *his* manta ray.

Bob's last five groups in a row were visited by an eight foot manta ray during their beach picnics and I was hoping this would be a regular feature of our trips.


Bob pointed, and there it was, a moving shadow just beneath the limpid surface, headed directly along the shore toward the beach where our picnic was set up. Scrambling down the lighthouse we raced to the beach, just in time to see the ray come soaring into shallow water no more than 50 feet offshore. For over an

hour we snorkeled and played with the manta as it swept back and forth along the beach, in water no more than ten feet deep. When we finally packed up our picnic and motored back out to where the *Cloudesley* was anchored, the ray was still cruising back and forth.


The coral bastions along the drop-off offer more photo opportunities than one can digest in a one week trip. There are arches, grottoes and sheer ravines slashing through coral mountains 100 feet thick. In some areas the drop-off meanders downward, while in others it plunges so vertically we wonder how it ever could have developed that sheer a precipice. On the reef tops swarms of goatfish, snappers and other tropical fish laze in the still waters. Dive site after dive site brought us more subjects: scorpionfish, a butterflyfish with an isopod on its cheek, flounder, groupers, trumpetfish and a host of other old friends.

These diving trips aboard *Sir Cloudesley Shovell* are an experience to be savored. They have an ambience that is hard to evoke in mere words.

In the evenings, we sit quietly on deck, steam from our after-dinner coffee wisping into the darkness. Above us in a inky sky 1000 mighty suns blaze down from the cosmos. There is quiet and peace. We've enjoyed something very special in these unheralded, unknown, unspoiled, even untouched islands: We've seen no other boats, not a single other diver in our entire week. These are somehow our islands, our reefs, our manta ray—our paradise.


For further information on See & Sea's diving programs aboard *Sir Cloudesley Shovell* in the Turks and Caicos Islands, write or phone Sea & Sea Travel, Inc., 680 Beach Street, Suite 340, San Francisco, California 94109. In California call (415) 771-0077. In other states call (800) DIV-XPRT. 

BOTTOM TIME CONFUSION

Bottom Time Adventures of Ft. Lauderdale, Florida is in no way associated with the vessel *More Bottom Time*. There has been some confusion regarding this because the names are similar. Bottom Time Adventures is the sole agent for the vessel *Bottom Time* which operates from Ft. Lauderdale to the Bahamas. 

U/W VIDEO RENTALS

Divers' World of Key Largo is offering an underwater video rental. The system is an Aquaport 2-50 which uses a new concept of floating the recorder in a watertight case on the surface. The diver then has complete mobility to videotape any part of the reef without being restricted to an area near the boat. The camera is light enough to be used on the deck of the boat for shots before and after the dive.

Divers' World is planning to make video rentals available on their Bahamas dive trips. 

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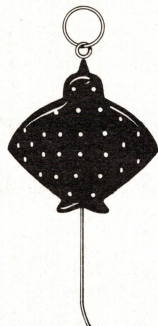
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OSPREY EXPANDS

Osprey Diving expeditions, featuring Captain Brian R. Slager's exclusive private diving charters, is now offering shipwreck excavations and guest portraits on videotape. These latter are available in either Beta or VHS format.

Osprey is also opening a new office in Marathon, FL and offering tow sub cruises to clients. The shipwreck excavations and tow sub cruises are only open to experienced divers in excellent physical condition. 🐟

AQUA ADVENTURES/ANSE CHASTANET

Aqua Adventures, Inc. is now representing the Anse Chastanet Beach Hotel on the island of St. Lucia in the West Indies. Known for its spectacular Pitons mountain peaks, the island offers lush tropical foliage, French colonial plantations, a rain forest and secluded beaches for the vacationing diver.

Near the town of Soufriere, Anse Chastanet Beach Hotel and Scuba Centre is a chain of interlocking chalets on a mountain hillside (each with private veranda) overlooking the beach and Chastanet Bay. The Scuba Centre is a PADI training facility and offers both beach and boat diving on the nearby coral reefs. 🐟

SOTO'S COURSE

Bob Soto's Diving Ltd. has developed a refresher course for certified divers who haven't dived for a year or more. With a morning shore dive from Bob Soto's new Scuba Centre on Grand Cayman Island and an afternoon boat dive, the refresher course provides a gentle re-entry to sport diving under the guidance of professional instructors.

A review of general knowledge includes study of a written exam divers must pass for certification, with use of the dive tables. Course participants then go out with gear, giving it a thorough check to see if it works properly and fits well.

Practical skills reviewed include mask clearing, octopus usage, buddy breathing and buoyancy control. The afternoon boat dive emphasizes boating etiquette and procedures.

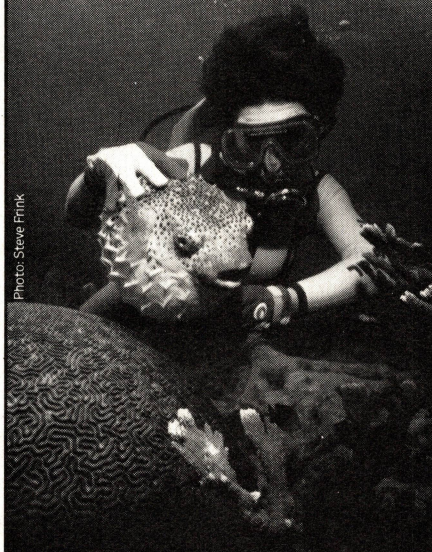
Since the morning dive takes place near a protective reef in the Caribbean, rather than a pool, Bob Soto's instructors use the opportunity to orient divers to tropical marine life along a trail that piques the curiosity while enabling the diver to feel secure in the water again.

Personalized attention guarantees that your questions will be answered, your weaknesses identified and corrected, your strengths built upon.

The one day course is offered on Tuesdays, Fridays and Sundays. 🐟

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Photo: Steve Frink



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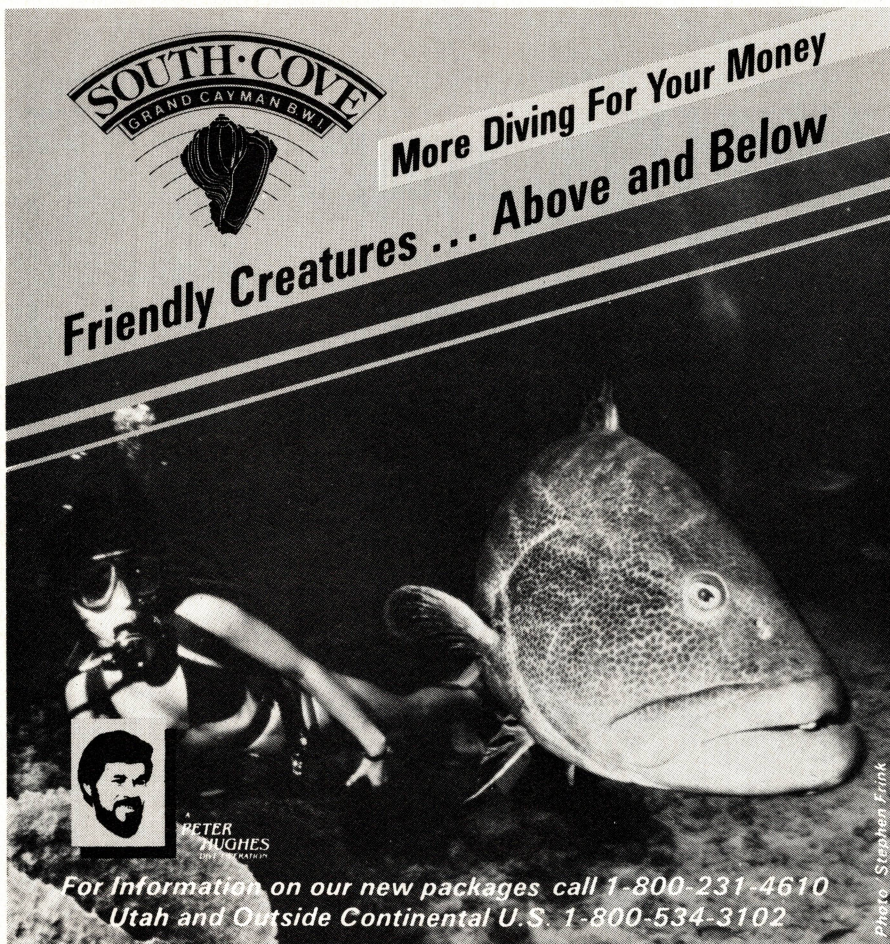
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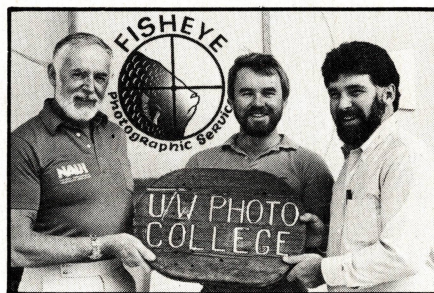
U/W PHOTO COLLEGE

The first undersea photography college in the world, sponsored by NAUI, has opened its doors on Grand Cayman, British West Indies.

The college is operated by Fisheye Photographic Services. The organization's two boats have been built or modified to accommodate divers specifically interested in underwater photography.

Full time courses are available year-round and cover every level from beginner to photo instructor. Topics include repair and maintenance of underwater photographic equipment.

The basic course lasts for a half day and includes the use of a Nikonos III underwater camera with 35 mm lens, strobe



and optical viewfinder. The student receives a one hour lecture on equipment use and basic instruction covering photographic composition before a one tank dive. Film and processing along with tank, backpack and weightbelt are included in the overall cost.

The three day course takes the student from basic to advanced underwater photography and covers such subjects as macro photography, the use of wide angle lenses and the use of models as well as composition and lighting techniques. The student will take a two tank dive each day; a deep dive followed by a shallow dive enabling him/her to experience the variations in available lighting at different depths. Again, the cost of all equipment is included in the price of the course.

Six day courses will be available monthly. These will be similar in content but will deal with each facet in greater depth. Students will receive six lecture sessions, six morning, two tank dives and advanced instruction on the use of models in underwater photographic studies.

Starting early in 1985, Fisheye will begin courses for those interested in teaching underwater photography. These courses will give in-depth instruction on how best to teach the subject in an interesting and informative manner.

Another project that Fisheye is promoting is the visit, three times a year, of a well known, professional underwater photographer who will give lectures and seminars. These week long classes will be known as Master Class. ➤

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SUNDIVERS JAMAICA

SunDivers Jamaica, in Runaway Bay, has opened new dive sites for the upcoming season. In addition to Ricky's Reef and Canyon, a dozen new sites will be outfitted with permanent moorings for ease in finding them and to protect the coral from anchor damage. ✂

DAN COURSE/PIRATES WEEK

The Divers Alert Network (DAN), in conjunction with the Undersea Medical Society, will hold its fourth course during Pirates Week, October 19-25, at the Grand Caymanian Hotel, Grand Cayman Island. The course, with a uniquely experienced international faculty, is designed for physicians and, emergency medical personnel, including paramedics and nurses, for 26 hours CME credit. Six days of two tank dives are included with Bob Soto's Diving Ltd. Special airline discounts and hotel and diving packages are combined with the Pirates Week fun.

Further information may be obtained from Cindi Easterling, Box 3306, Duke Medical Center, Durham, NC 27710. ✂

SEA AGGRESSOR

Florida Adventure Makers is offering trips from West Palm Beach to the Bahamas aboard the 90 foot *Sea Aggressor*. The boat features air-conditioned, private staterooms, native cooking and the trips are for divers and non-divers alike.

The *Sea Aggressor* was modified and outfitted by Co-Mar Offshore Corp. in Morgan City, LA, a leader in converting oil field crew boats into pleasure craft. ✂

KEY WEST PACKAGE

A diving/snorkeling package is being offered by the Ramada Keys' End and Billy's Reef Raiders in Key West, FL. It includes three days and two nights in the recently renovated Ramada; a two location/two tank dive trip with Reef Raiders (including equipment); one dinner in the Ramada's Italian restaurant; a welcome cocktail; two full breakfasts; a diver's box lunch; unlimited use of the hotel's tennis courts, shuffleboard and putting greens; T-shirt, Old Town Trolley Tour; discount coupons for the area attractions; and all taxes and gratuities. Additional nights in the hotel and dives are available. ✂

CME SEMINARS

See & Sea Travel of San Francisco has expanded its schedule of Continuing Medical Education (CME) seminars. These seminars, entitled Medicine in the Marine Environment, include some new destinations: Aug. 19-Sept. 5, the Galapagos Islands; Sept. 29-Oct. 6, Cayman Islands; Nov. 2-17, Coral Sea, Australia; Feb. 8-20, 1985, great white shark, Australia; Apr. 13-25, 1985, Truk Lagoon; March 9-16, 1985, Belize; Sept. 1-17, 1985, Maldives/Sri Lanka. ✂

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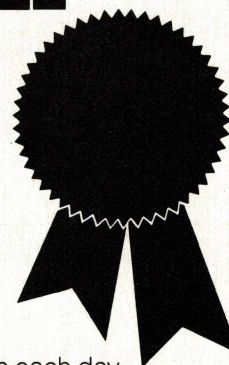
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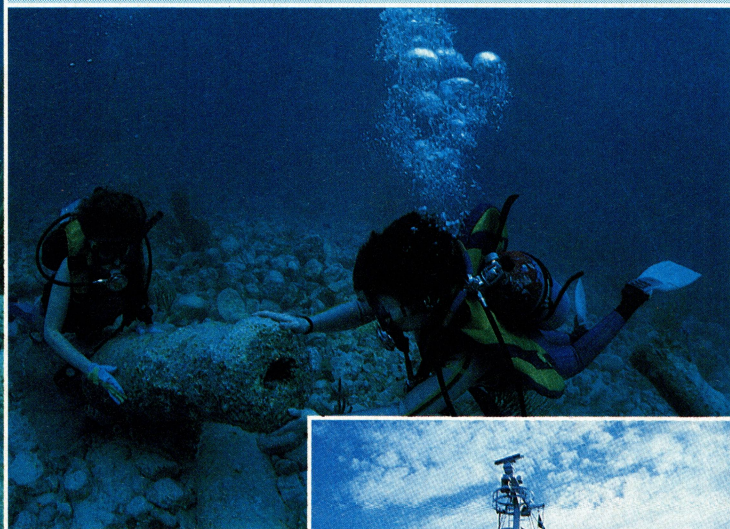
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Chinchorro Banks



Exploring Mexico's Graveyard of Ships

TEXT AND PHOTOGRAPHY BY STEVE LUCAS

The music couldn't have been more appropriate. We were just barely out of a real life "Margaritaville," and the songs from the saloon of the 100 foot plus motor yacht were telling our adventure before it even unfolded. From the deck, the sparkling lights of Cozumel danced across the horizon's waters. The tall masts of the M/V *Pelorus Jack* continuously swayed like massive pendulums in time to the almost ceaseless roll of the ocean. The crescent moon of a perfectly clear sky seemed in perpetual motion. Back and forth it floated to the roll of the yacht as the Caribbean soul lyrics of Jimmy Buffett drifted over the waves.

The song, and others from the same album, would be our themes—memorized, as we played them again and again while motoring the 100 or so miles in a southerly direction through the Mexican Caribbean. This would be pure adventure. Not a typical dive cruise with preselected dive

locations, but a continuous search of a small section of Mexican reef that has rarely been dived. Here on Chinchorro Banks we were in search of wrecks; old and new.

Isolated the 30 by 5 mile reef lies ten miles from the sparsely populated Yucatan peninsula. Not easily accessible, it has been the source of stories and fables from fishermen and stranded seamen for hundreds of years. The bank is a water covered graveyard. At least 100, and maybe up to 400, wrecks are strewn about its shallows. Treacherous, it has at least one funnel shaped entrance that is said to act like a siphon. It has meant death to many a ship. According to the tales, Chinchorro has "wreck sitting upon wreck" along its length. The scenario is told like the script of a good novel. Based on fact, it is undoubtedly interspersed with fiction. The stories, although unsubstantiated, even tell of a stranded subma-



photo/Geri Murphy

rine. Historically, these waters have been the scene of numerous Spanish and English galleon sinkings—a few located, most still hidden beneath sand and coral. Gold, silver and jewels are likely lost somewhere nearby.

From the air, the banks are seen to be fringed by long strands of sheer walls fronted by the inky water of the Caribbean—walls that, likely, no one has ever dived. Monsterous reef sections, too isolated to bring a large vessel in close, wait to tempt the captain of a dive yacht. Near the north end of the bank, her treachery is readily evident from above the water. The boiler of an old steamer serves as a mid-water perch to hundreds of gulls as they screech and fly from island to unin-

habited island in their daily search for food. Ten feet beneath the surface the ribs of an early 20th century ship are stretched across the sand. Overgrown with seafans and small corals, it causes the diving explorer to wonder how her captain made the fatal mistake. Did a storm put her on the rocks? What about the fate of her crew or passengers? Little history is recorded about this remote reef.

A short distance away there is another wreck. Lying in a pile, barely 12 feet beneath the surface, are at least 30 bronze cannons from an 18th century galleon—possibly a pirate ship, probably British. Weighing one to two tons each, the cannons are piled like cord wood in a discordant stack, forever quiet. Completely overgrown, they lie above piles of unspent ammunition. Cannon balls and lead shot, once ready for a battle with other vessels, long since lost, will never be fired. Evidences of the crew are frequently found beneath the sand. Belt or shoe buckles and perhaps a coin or personal treasure or two can be dredged to the surface by sweeping away the sand with the wave of a hand. To one side of the cannons are two huge anchors, perhaps ten feet or more in length. Seafans and fire corals cling tenaciously to their giant

flukes, shanks and rings. Fifty yards away, a third anchor sits alone. We wonder: Perhaps the captain tried to put his anchors in the sand to hold against a storm. With the shallowness of the water and the apparent size of such an armed vessel, it was probably without value.


Although our trip was too brief to explore deep into the bank, it is likely that wreck diving is not the only enticement Chinchorro holds for underwater adventurers. The few that have gone near the central and southern sections, where the reef nears Central America, have returned with tales of coral that challenge that of the best Caribbean dive destinations. It is assumed the reefs are similar to those of Cozumel and Belize.

The *Pelorus Jack* makes it possible to explore these more southerly reefs for up to a week at a time with a degree of creature comfort. Both four and seven night trips are scheduled monthly, all with Saturday departures. Fully equipped with radar and electronic navigational equipment, the vessel has six semi-private and dormitory type, fully air-conditioned staterooms. Twelve guests is considered to be the optimal size group. Each stateroom is equipped with a private head and shower. One even has a bathtub. The main sa-

loon is outfitted with color TV, video tape deck and a complement of movies. All-you-can-eat meals are served in the saloon around two large dining tables and include complimentary wine.

Diving is on an unlimited schedule, depending on appropriate depth/safety considerations. Divers are ferried to the reef via one of two inflatables. Since most dives are very shallow there is usually little concern about decompression. The vessel normally has no set dive itinerary and guests should be prepared for a good deal of exploratory diving in the virgin reef and wreck areas.

Reservations and additional information are available from the M/V *Pelorus Jack's* exclusive booking agent: Poseidon Ventures, 359 San Miguel Dr., Newport Beach, CA 92660; (800) 854-9334. In Texas and the southern U.S. contact Poseidon at: 505 N. Belt, Suite 275, Houston, Texas 77060; (713) 820-DIVE.

There is in all of us, who have heard "Mother Ocean's call," a dash of pirate blood. Perhaps not the urge to plunder, but definitely to roam and search for the "treasures" she hides from all others. All we need is a dream, an adventurous port and a tall ship. Mexico's Caribbean and the M/V *Pelorus Jack* might be yours. 

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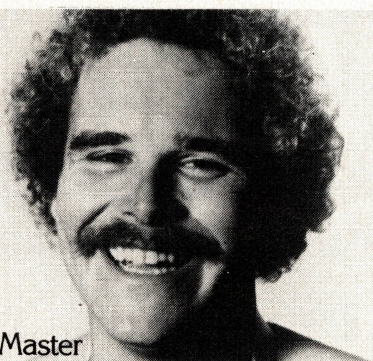
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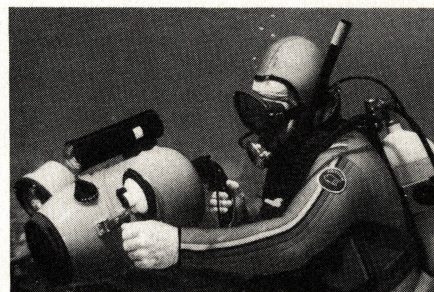
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GHOST TOWN QUARRY

**TEXT AND PHOTOGRAPHY
BY MARK H. DORFMAN**

In the *Wizard of Oz*, Dorothy leaves Kansas to seek happiness "Over the Rainbow." Another Kansas native who has become famous for traveling to fantastic worlds is William (Smokey) Roberts. He has found his destiny not over, but under the rainbow—as a pioneering American



scuba diver and U/W cinematographer.

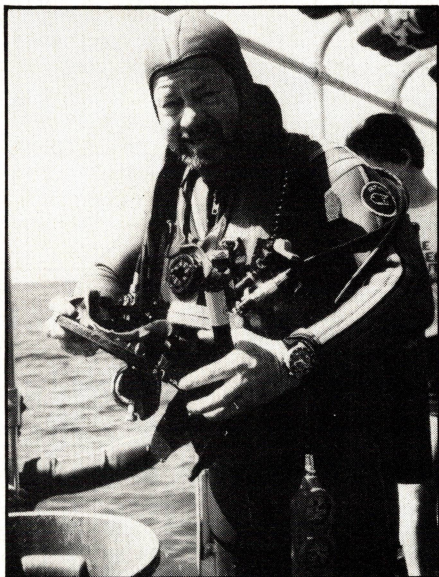
Smokey was given his nickname by the audience of radio station W9XBY in Kansas City back in 1937. Bill Roberts was 12 years old then and playing accordion with a popular country and western group. One night the group's leader announced a contest: "We need a new name for the kid," he said and offered a \$10 prize. "Smokey" was the winning entry and "the kid" has been Smokey ever since.

Smokey started diving in the late 1950s, shortly after leaving the band to settle down with wife Dottie in Lancaster, Pennsylvania. There were few divers and no recognized dive sites back then. Smokey and his friends often dived in flooded quarries. Several were already popular as local swimming holes.

Quarry diving remains an important part of his activities. Smokey has traveled far during his quarter-century diving career: He has filmed underwater phenomena all over the world. Yet, he made one of his most famous documentaries in his own neighborhood. *The Medusa Affair* tells the story of an unusual species of freshwater jellyfish, first found in a quarry near Hellam, Pennsylvania.

Smokey's underwater cinematography has become increasingly popular over the last two decades. With associate Jean Berghmans, he produced the New York International Film Festival gold medalist, *Love Under the High Seas*, a delightful short subject about a love triangle involving a young woman, a dolphin and a jealous grouper. Other medal winners include his documentary, *Truk Lagoon*.

Perpetually in motion, always talking, always working with people, Smokey can usually be found talking on the telephone while simultaneously selling equipment to one customer, telling another that he is late for an appointment across town and packing for a trip abroad. Still, he always finds time to visit with friends and chat about diving and filmmaking.



Smokey, and his partners' latest project is developing a new recreational quarry, part of an old industrial ghost town near the small Pennsylvania Dutch Country community of Bainbridge. Founded in the 1840s and named for its turn-of-the-century owner, Billmeyer quarry was once the site of a factory town with a population of 700. The quarry flooded in the late 1950s.

According to the dictionary a quarry is, "a place where stone or slate is excavated." Companies that dig quarries think that striking an underground stream or other source of water is a tragic end to their venture, an end costing hundreds of thousands of dollars in lost time, equipment and frustrated hopes. To Smokey and his partners, former commercial divers Steve (Dax) Mutchler and Carmelo (Mike) Terassi, the flooding of Billmeyer quarry was not an end but a beginning. They saw an opportunity to recycle the industrially useless site, creating an outstanding facility for inland watersports.

The original vision of Bainbridge Sportsmen's Club was conceived by Steve Mutchler, who has invested ten years of planning, negotiation and hard work in the project. For the last two years, Mike Terassi has been redesigning and re-landscaping: clearing roads, creating parking areas and opening several convenient access points to the water. Additional improvements underway include the construction of underwater platforms. They are designed to serve as worksites where instructors can pause to run students through training drills or check-out exercises.



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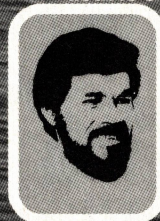
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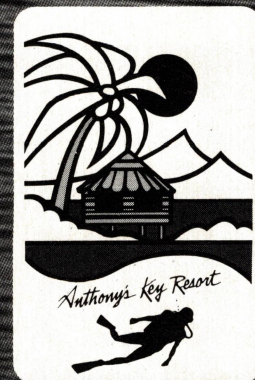
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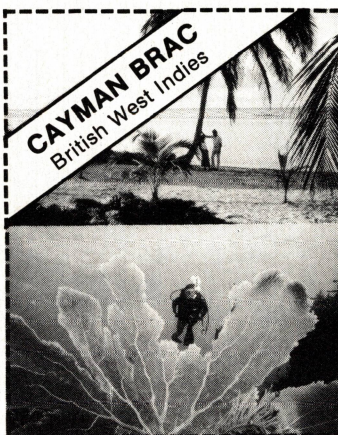


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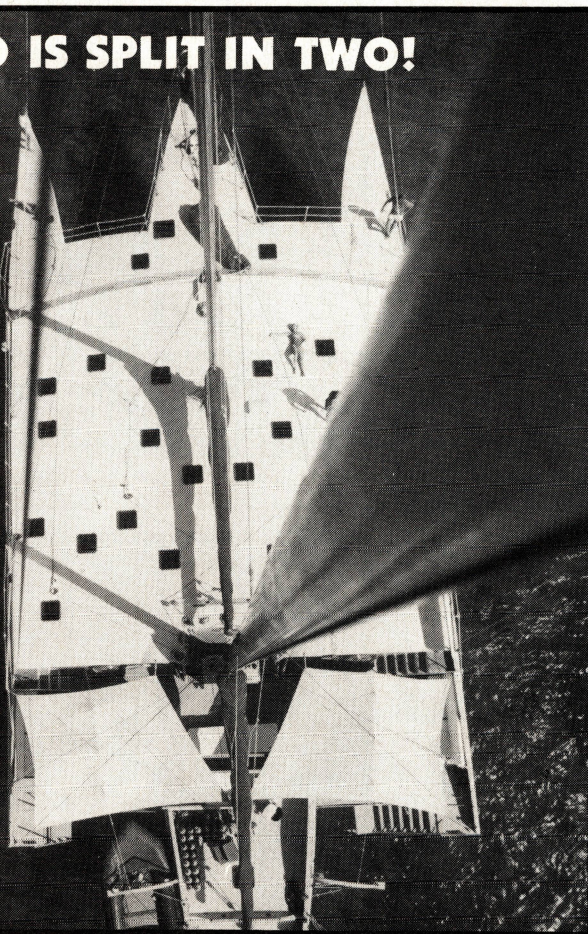
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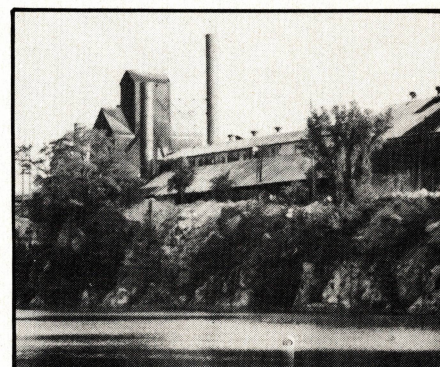
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GHOST TOWN QUARRY

"Billmeyer quarry has everything," says Steve. "There are abandoned buildings on the grounds underwater. There's old machinery, lots of fish—some real big ones—and lots of unusual underwater geography. The visibility is great."

Old maps of Billmeyer indicate several fascinating dive routes, including one that follows the now submerged roadway and passes several underwater structures. This tour visits the fine lime grinding plant and former dolomite firing kilns. Rusting ruins of the derrick and other plant facilities line the edge of the quarry. Skeletal



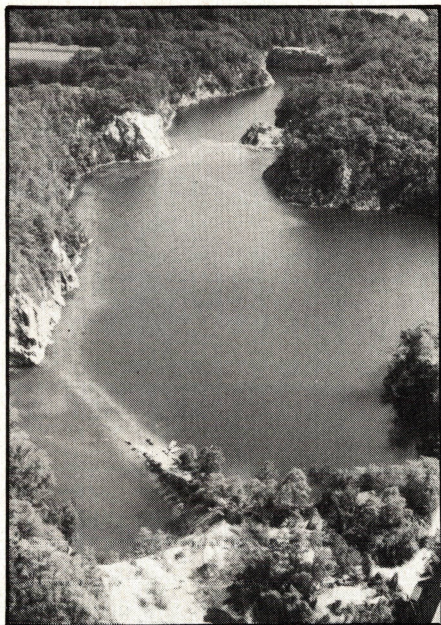
remains of houses, stores and other buildings dot the quarry grounds.

The 100 acre site (about 23 acres of water) is now known as the Bainbridge Sportsmen's Club. Visitors can explore parts of the abandoned town, then suit up to tour the remainder of the quarry. Most

of it is less than 60 feet deep, but caution is required. One section drops off to more than 100 feet.

Summer water temperatures near the surface can reach 80°F, but don't leave your wetsuit at home. Pennsylvania quarries can provide a quick lesson in thermoclines, even in the summer. At 30 feet, temperatures rarely exceed 55°F. Below 50 feet, they typically hover around 40°F. In winter the quarry offers ice diving.

The bottom of the Bainbridge quarry is carpeted with the dolomite and limestone that were once commercially mined there. Unlike sand or mud dolomite is a coarse, heavy material that settles quickly when disturbed. The water is always clear. Visibility is typically 30-50 feet. Steve and Mike have stocked the quarry



with trout and bass. Bainbridge Sportsmen's Club is already popular with area fishermen, picnickers, campers and hikers, as well as divers.

The on-site dive shop provides air fills and offers a full line of equipment sales and rentals. There are several paddle boats and canoes available for use by visitors who prefer to explore the quarry from its surface. Other facilities include changing rooms and restrooms, with planned future development of showers, tennis courts and expanded picnic and camping areas.

Now Smokey and his partners have acquired a DC-3 aircraft. They plan to bring it to the Bainbridge Sportsmen's Club for a final one-way flight to the bottom. Some folks say it can't be done. But who would have thought that a 12 year-old accordion player from Kansas would become a world famous scuba diver? A character like that is capable of anything!

For further information, contact Bainbridge Sportsmen's Club; (717) 426-2114. Or you can contact Smokey's Divers Den, 412 North Duke St., Lancaster, PA 17602; (717) 393-5333.

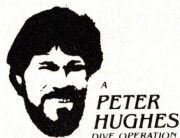
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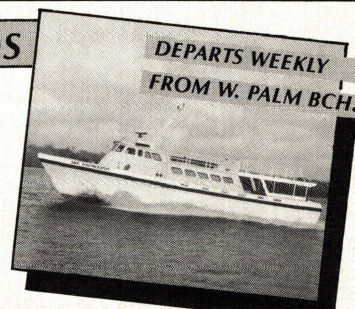
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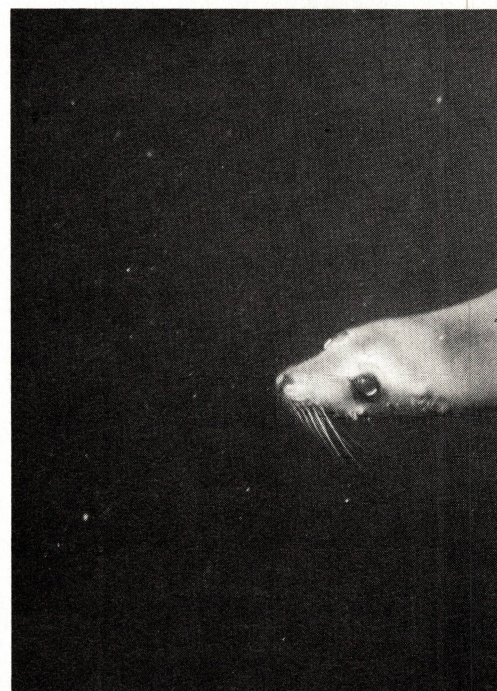
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**TEXT AND PHOTOGRAPHY
BY STEVE ROSENBERG**

Most divers who live in Northern California will tell you that if you don't mind cold water, the diving there is among the best in the world. The Monterey Peninsula, from the Monterey harbor to Point Sur, is by far the most popular and heavily dived area in all of Northern



and Central California. An estimated three-quarters of all sport diving from the Pismo Beach area north to the Oregon border takes place in this area and with good reason. The Monterey area offers the most magnificent kelp forests in the world, in addition to rocky coves, sandy beaches, incredible submarine canyons and living carpets of rainbow hues.

There are so many great places to dive in Monterey that one of the best and most accessible dive areas is often overlooked for the more exotic and remote spots. On the south end of the harbor in Monterey extends a rocky, man-made breakwater stretching 400 yards into the bay.

Access on the south side of the breakwater is from a narrow, rock strewn beach, generally used by instructors from all over Northern California for basic scuba classes. The surf is rarely noticeable.

On sunny spring and summer days it is not unusual to see 100 divers preparing to go into the water or clustering in class rings of eight to ten divers just off the beach. The majority of these divers, however, are only new students winding up their basic certification courses. If you ask a diver in Monterey if he or she has dived the breakwater, the normal response is, "Oh yeah, that's where I did my checkout, but I've never been back."

Few of the classes who put in at the breakwater ever take the students more than 100 yards offshore. The really good spots along the breakwater start at least 150 yards from the beach, where students aren't taken during their classes. The obvious reason is that class time doesn't allow for the long kick out and casual sightseeing.

Access on the inside of the breakwater is a boat ramp from which divers can



launch inflatables and powerboats. Diving is restricted to the outside of the breakwater, away from boat traffic.

Most experienced underwater photographers rave about the abundance of marine life which can be found at the breakwater. In an area only 25 yards wide and approximately 300 yards long, is perhaps the greatest concentration of marine animals and vegetation that can be found anywhere in California. Pillings from abandoned sardine canneries and jumbles of huge concrete blocks lie along the entire shoreline forming thousands of cracks and crevices. On all exposed surfaces there are living carpets of *Corynactis*, cup corals, barnacles, algae, anemones, crabs and other small marine denizens. In among the shallow rocks just offshore are large numbers of spider crabs, usually seen squaring off in territorial confront-

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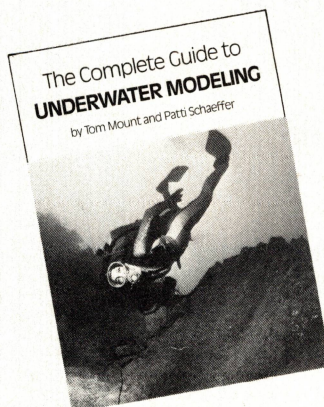
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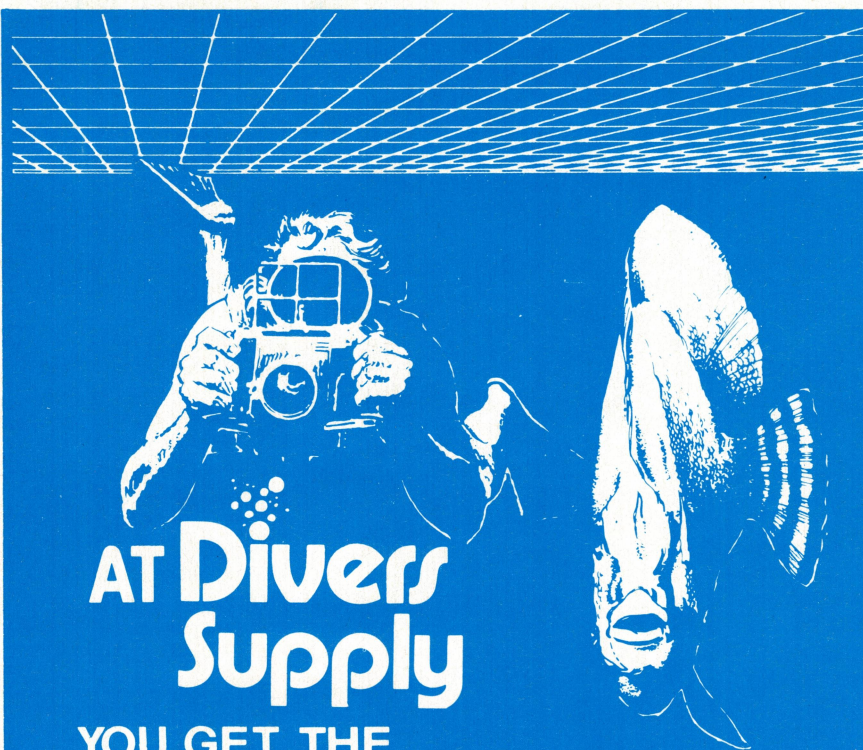
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MONTEREY BREAKWATER

tations. Also close to shore, divers frequently find monkey-faced eels up to four feet in length, protruding from the protection of their rocky hideaways.

Halfway out along the breakwater, cormorants congregate in large numbers on the rocks, while others in twos and threes make lengthy forays into the shallow wa-



ter. It is quite common to see a cormorant "fly by" at 30 feet, chasing a small sculpin or scouring the bottom for other tasty morsels. These diving birds reportedly travel for distances up to 100 yards underwater, easily outdistancing their awkward spectators.

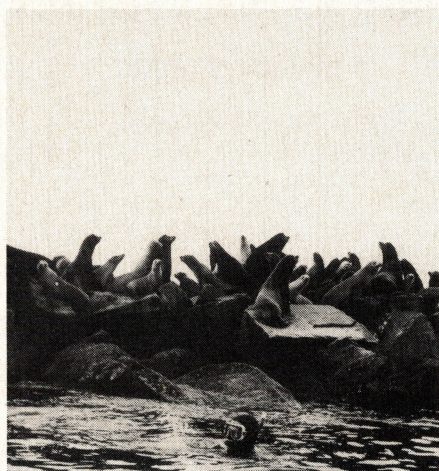
Like most underwater areas close to shore where a lot of people get together, the bottom is littered with all sorts of refuse and debris. While unsightly, throwaway bottles provide excellent protection for clams against their natural predators; they feed by pushing their syphons out through the bottlenecks. Cans, dark bottles and old shoes make wonderful homes for small octopi and brittlestars.

The most exciting and interesting area of the breakwater is near the end. A large population of migratory California sea lions covers most of the exposed rocks, sunning themselves and frolicking in the shallows. The population is a mixture of young males and females and older adult males. Most females of breeding age stay closer to their mating grounds or rookeries, mostly on Southern California's offshore islands.

The barking of the sea lions can be heard from quite a distance, both under and above water. A cluster of younger sea lions can almost always be found off the point of the jetty. Their flippers stick out of the water at all angles, looking like miniature whale flukes.


With their speed and maneuverability, sea lions enjoy freedom of movement and often tease other animals or play with them. The younger ones have an unnerving habit of playing chicken with divers, veering off at the last possible moment after snapping their teeth or blowing bubbles. Although playful and usually harmless, sea lions boast a mouthful of impressive teeth and could easily do a

great deal of damage. The bull sea lions, which should be avoided by divers, spend most of their time sleeping on their favorite rocks, breaking their slumber on-



ly to bellow a warning at another intruding male or grab a quick meal.

One of the most noticeable features of the sea lions are their large, round, expressive eyes, which make the divers feel as if the animals are actually communicating with them.

A dive at the breakwater, whether watching the playful antics of the sea lion or studying the beauty of the ocean floor, is always breathtaking, always unpredictable and always rewarding. At the end of Monterey's famous Cannery Row, it is close to several local dive shops and has ample parking facilities. When making the final decision on where to go on your next Northern California dive trip, why not go back to that place where you had your first dive? You might be pleasantly surprised. 

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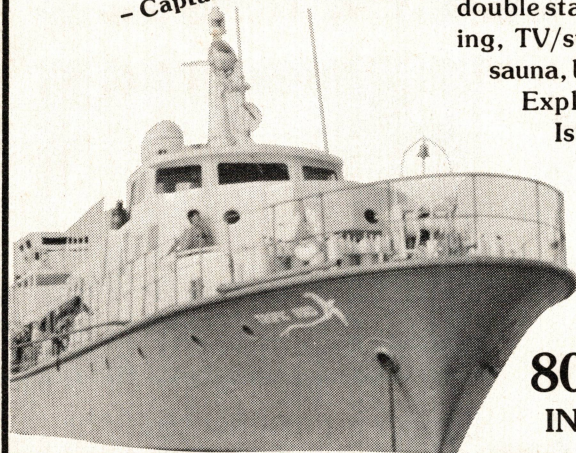


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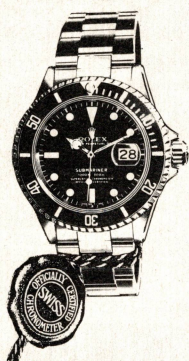
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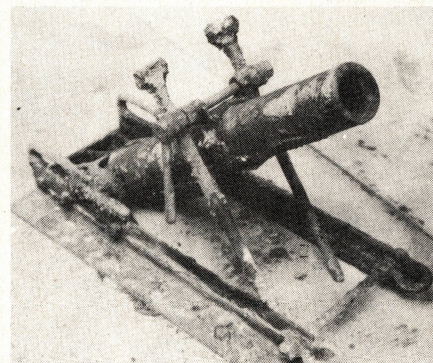
Lake Michigan CANNON

BY SAM MARECI

Inspired by tales of an uncharted underwater obstruction on which local fishermen had snagged their nets, my wife Carol and I set out on board the *Sea Ranger* from Jackson Harbor, Washington Island, Wisconsin to explore this area in Lake Michigan.

After a trip of only 20 minutes we arrived on site and set out markers for our search pattern. Cruising the pattern while towing a magnetometer, we hoped to register a target which would indicate the presence of the obstruction.

After three hours of searching, however, we still hadn't registered anything significant, so I decided to stray off our



photo/Eldred Elfson

pattern. Soon after, we got a reading on the mag. We turned the boat to again pass over the target and the mag began to go crazy. It appeared something had gone wrong with the cable. While pulling in the magnetometer tow fish to check it, our boat's engine died. Substituting one of the mag's batteries for the engine battery was the only way we could get the boat to run so we were forced to return to port without discovering the cause of the reading we had recorded.

Seven weeks later, with new batteries and a repaired tow fish cable, we again set out to find the underwater obstruction. This time we were accompanied by diver George Muszynski.

We returned to the location where our mag had registered the target and soon had another reading. This time we dropped anchor and George made a dive to see what we had discovered. He returned to the surface shortly and told us our obstruction was a broken up wreck. After completing his dive George told us he thought there might be a cannon on the site. Further exploration of the wreck had to wait until the next day, however.

When we returned to the site the following morning Carol and George made a dive on the wreck and she agreed that the object he had found might, indeed, be

a small cannon, but it was buried too deeply to be sure.

At this point, Wayne and Beth Peterson from Escanaba, MI motored up in their boat. While Wayne and George went down to attempt salvage of the wreck's deadeyes, Carol tried to dig out the cannon. Her attempt was unsuccessful and we decided to tie a line to the cannon and pull it free using the boat. George attached the line and when the boat pulled, the cannon came loose but very quickly got stuck again.

We decided to attempt to raise the cannon by hand and when all five of us pulled on the line we were able to bring it to within 15 feet of the surface. By attaching an inflated BC to the cannon, we were able to pull it to the side of the boat, but were unable to lift it in.

We began to tow our find toward shore but were making slow progress and were running out of time. George had to catch the last ferry to the mainland at 6:00 pm. Wayne suggested we beach the boat on a rock shelf and lift the cannon on board.

When the boat was on the ledge we finally had a chance to observe the cannon closely. It had leveling arms that still moved. We were able to remove part of this mechanism and lighten the cannon enough to lift into the boat.

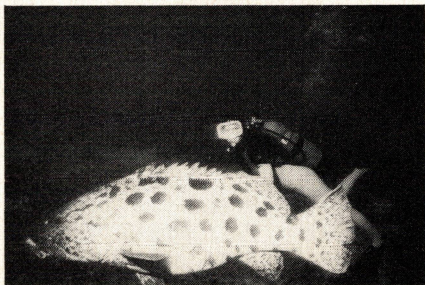
When we returned to shore we were able to photograph and measure our gun. It was 32 inches long and had a two and one-half inch diameter bore. The base plate and leveling arms appeared to be of brass or bronze and the rest of the frame was iron or steel.

After cleaning by a professional, our cannon will be displayed to the public and then will go to a museum where it can be enjoyed by everyone. 🐠

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photo/Carl Roessler

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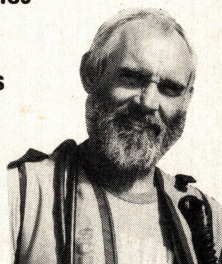
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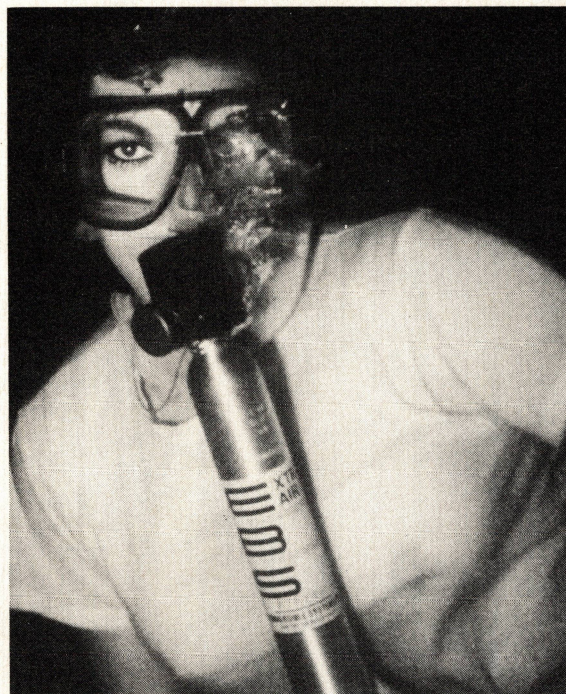
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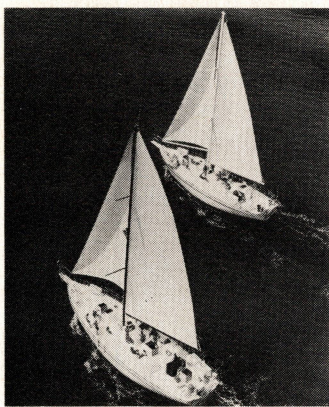
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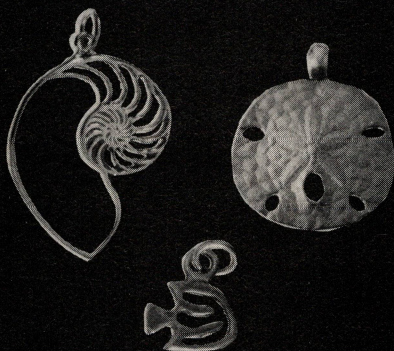
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MCKENNEY CORTEZ TRIPS

Underwater film producers Jack and Sari McKenney will be leading 3 dive trips to the Sea of Cortez this year on the Baja Explorador. • July 22-29 • July 29-August 5 • August 5-14 • Scuba tanks, air fills, weightbelts and superb cuisine, are provided in the diving package, as are two nights stay in a hotel. For more information contact Mona Rouse at Expediciones Baja S.A., P.O. Box 8998, Santa Ana, CA 92728. (714) 638-9467

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COMPUTER DIVE TABLES

Tropic Seas' Computer Dive Tables is the main program among a number of scuba programs on the Tropic Seas' Divers Disk for the Atari 400/800 series personal computers. The programs are being distributed free under the user-sup-



ported program philosophy. Donations of \$15 (for the development of future programs) are accepted, however. All of the programs are in the public domain and divers are encouraged to copy them and share them with others.

Tropic Seas' Computer Dive Tables are taken from the U.S. Navy Standard Dive Tables as presented in the *NOAA Diving Manual*. The program covers depths to 190 feet and bottom times at each depth which will place the diver in repetitive groups up to Z. Where decompression is required, the stops are presented along with a warning.

For more information contact: Tropic Seas, Inc., P.O. Box 1491, Friendswood, TX 77546.

NAUI COLLEGE

The fiscal year 1983 (ending December 31) was a resounding success for NAUI College. Of special note was the increase in student registrations over 1982—up 129 percent. The school head credited referrals from alumni and a marketing team that correctly targeted student interest areas for the upturn.

"The most gratifying aspect of this surge is that we did not have to sacrifice our philosophy of keeping class size small to personalize instruction to achieve growth. We will continue to keep student-teacher ratios low to maximize effectiveness," commented Jim Hicks, president of the college.

The college, which conducts professional preparation of advanced sport divers, instructor candidates and postgraduate instructor students, is entering its sixth year in Southern California.

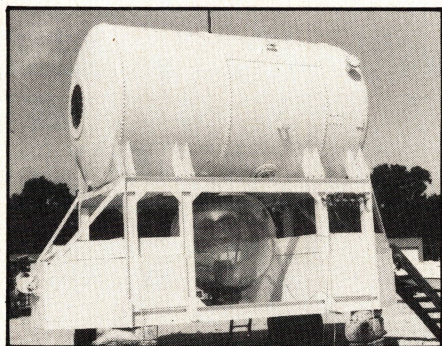
SC DIVE DIRECTORY

The *South Carolina Diver's Guide* is being published to familiarize divers with the unique variety of experiences available in that state. Divers interested in contributing information on dive sites are asked to contact Wendell M. Patton, III, 132 Littlehampton Drive, Irmo, South Carolina 29063. Those who provide information will be recognized when the guide is published. 🐠

UNDERWATER CLASSROOM

An educational underwater habitat has been placed in Key Largo, Florida. Marine Resources Underwater Classroom Lab will be conducted in association with educational institutions throughout the states. It is the first of its kind to offer marine science study in an underwater environment to high school students, as well as to college and university students and research scientists.

A summer teachers' training institute will prepare high school instructors to



conduct classes in a new unit of marine ecology. The young aquanaut candidates will be selected from those classes to participate in the habitat program.

The junior college program will involve students from other states and nations, while the university students will participate in individual research projects using the habitat as a tool to investigate the ocean's resources. All college level projects will be managed by the Florida Institute of Oceanography. 🐠

NASDS AWARD

Whitey Baun was recently named NASDS Salesperson of the Year. He was presented with the award at the 14th An-



nual NASDS Store Owners Only Clinic. Baun represents a number of fine lines of scuba equipment in the Northeast. 🐠

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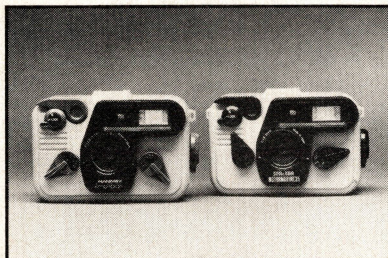
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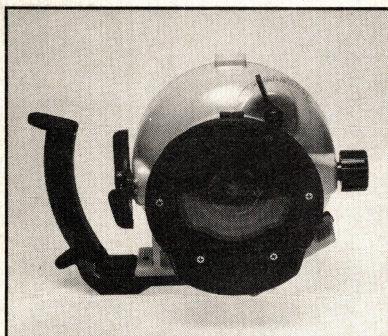
Hanimex and Sea & Sea cameras are available in 110 and 35mm versions. These compact cameras are waterproof to a depth of 150 feet!

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UDT KNIFE

(Continued from Page 30)

produced men who were at home with mud, exhaustion and hostile beings.

The graduates of the Fort Pierce School were organized into small, six man Navy Combat Demolition Units, and a large number of them were sent to England in the winter of 1943-44. They were to join the growing invasion forces but, unfortunately, no one there knew exactly what to do with them. Obviously the military planners of the day were not yet oriented to the concept of Frogmen. Only after weeks of being shipped around to various stations and being used for such mundane activities as guard duty were they finally able to settle down for specific invasion training. Additional men were picked up from other commands to swell the CDUs, and though previously untrained, these men were fitted into the six man (and one officer) units.

On D-Day the Navy CDU men were sent ahead to clear the way for the invasion forces. They wore wax and oil impregnated, hooded, canvas firefighting suits, with field shoes and long stockings, also impregnated. A protective mask covered the lower parts of the face in anticipation of mustard gas.

By the time the ships actually neared the French coast the invasion forces were wet and seasick because of a two day weather delay on the rough channel. As the landing craft approached the beach, the preliminary bombardment was lifted on schedule, but continuously cloudy skies made it impossible to hit enemy strongholds accurately.

Because the Germans had reserves available at Omaha Beach they were able to immediately replace losses in bombarded bunkers. Consequently, when the first allied troops hit the beach, enemy fire began to fall immediately. Within minutes the water was littered with debris and wrecked craft and many demolition units were wiped out altogether. Nevertheless, the Frogmen proceeded to set up charges at their assigned spots. There was no shelter on the wide sand field and the men worked in a rainstorm of shrapnel. The infantry, meanwhile, was seeking shelter behind some of the charged obstacles and tripping over the detonating cords between the obstacles. In four places, however, the infantry did heed the purple warning flares which the CDU had placed and four gateways to France were opened with tremendous explosions. These cleared areas allowed landing craft to come right to the waterline and unload more and more men plus heavy equipment as the day wore on. Eventually, of course, the defenders were overwhelmed and the invasion was a success. The Navy Combat Demolition

Teams paid a price however; losses at Utah Beach were 30 percent and at Omaha about 60-70 percent. The following is a quote from the U.S. Naval Special Warfare Training Handbook: "These men were our original ancestors and no amount of honor bestowed upon them will be excessive; they will always have a place in the rank of history's gallants."

The survivors of this significant day were shipped to the Pacific where they were restructured and renamed Underwater Demolition Teams (UDT). The lessons of Normandy were applied to the amphibious problems of the Pacific islands, and many of the tactics that were developed then are still part of operational procedure today.

The missions became standardized. There was usually a reconnaissance mission on the morning or evening preceding an invasion by four days (known as D minus four in military jargon), followed by a demolition clearance at dawn before the actual attack. Under cover of the bombardment group's guns and the air support's bombs and strafing, the APDs (Attack Personnel Destroyers—destroyer escorts converted to fast-moving troop carriers) with four high speed landing craft aboard, would move in through the heavier ships to within a few miles of the beach. There they would lower the landing craft (LC) with the UDT men aboard, and withdraw. A seven man rubber boat would be slung along the port side of each LC. The LCs would then speed in a zig-zag pattern to a distance of about 1,000 yards from shore, make a turn to port and commence the splash run parallel to the beach. The UDT swimmers would slip into the rubber boats and, when signaled, roll into the water on the seaward side. Thus, a whole string of men would be dropped and at that range their tiny bobbing heads would be unnoticeable from the beach. On these reconnaissance missions the Frogmen would swim toward shore, taking soundings and recording the underwater data on a plastic slate. When the swim to shore had been completed, the men would turn and swim back out to sea, forming a line for pickup. The landing craft would then make its run as before, with the men grabbing hold of a snare-loop on the out-rigger rubber boat, to be swung aboard by the momentum of the speeding vessel.

When the intelligence from a reconnaissance mission had been gathered, the swimmers would again be deployed, to undertake the demolition mission.

In 1946, after the war had ended, most of the 34 UDTs were demobilized and the men sent home to civilian lives. Thousands of fins, coral shoes, knives and facemasks were stored in warehouses. Personnel for five standard teams were retained, with three teams in the Pacific Fleet and two in the Atlantic.

UDT men served in Korea and by the
(Continued on Page 122)

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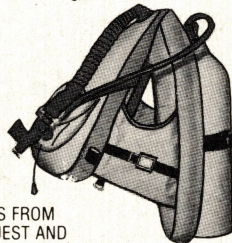
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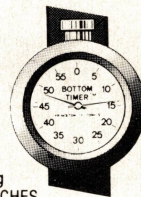


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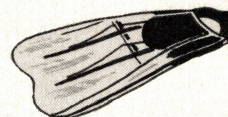
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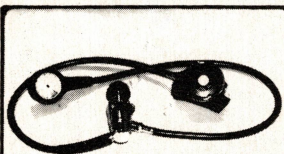


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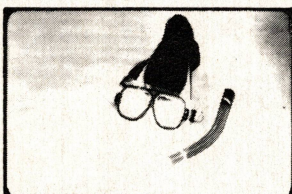
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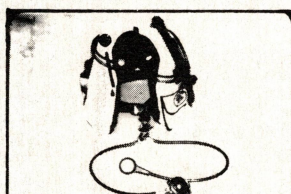
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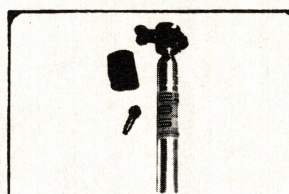
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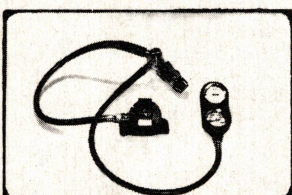
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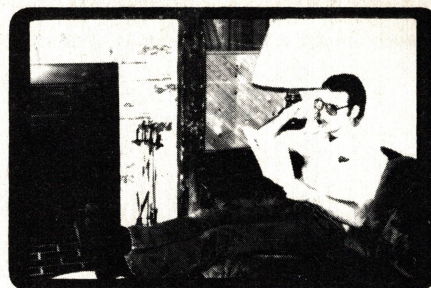
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 Dacor UL900 rechargeable 6V dive light..... 59.95
 Alpha flag..... 5.95

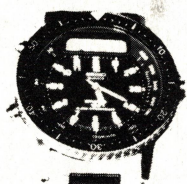
Equipment bag, measures 27 x 15 x 16, camouflage cordura material... 61.95
 FUJI FILM 1600ASA 24 exp. 135mm film. Five roll pack..... 22.50
 Princeton Bottom light, uses 4 C cells..... 18.95
 Tekna T-1915 Krypton light, uses 8 AA cells..... 32.00
 Dacor DM40 tri-view mask.... 32.50
 Ikelite side view compass..... 34.95
 Ikelite foam filled equipment case #3939..... 54.95



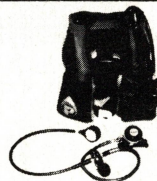
5Y - Poseidon Maximum II, Dacor triple console, Jacket B.C.D. with power and pack
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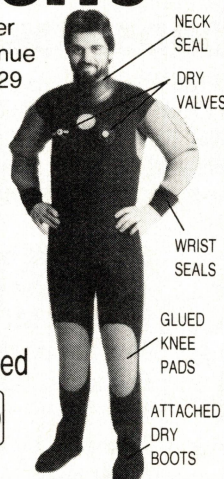
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UDT KNIFE

(Continued from Page 119)

early 1960s, in the Vietnam conflict. By this time the equipment and techniques had become quite sophisticated. It was also at this time (January 1, 1962) that President Kennedy commissioned SEAL Team One and Two. The SEAL (Sea, Air and Land) Team is a Navy tactical unit designed to conduct naval special warfare much the same way as the Army's Special Forces. Many of the early SEAL Team members were drawn from existing UDT units.

Most recently the SEAL Teams proved their value when they were the first U.S. forces ashore on the island of Grenada. A highly-trained SEAL unit went ashore before dawn, to secure the safety of the British Crown-Appointed Governor General, Sir Paul Scoon, who was being held prisoner by the Marxist regime. Two SEAL Team members lost their lives in this action, but Sir Paul's safety was assured and the mission was a critical facet of the overall Grenada rescue mission.

UDTs and SEAL Teams have served proudly and professionally in their many years of existence. The gear and methods in support of their mission have grown from goggles and boots to sophisticated closed-circuit diving rigs and from rubber boats to delivery by parachute.

Considering the valiant and colorful history of the Frogmen, it's not surprising that Wenoka chose to commemorate their deeds on this, the 40th anniversary of the first UDT mission.

WRECK FACTS

(Continued from Page 8)

Publications, P.O. Box 6007, Suite 166, Redding, California 96099.

Everybody loves a mystery wreck, especially if it's in the Caribbean and over 200 years old. But the HMS *Thunderer*, which disappeared in a Caribbean hurricane in 1780, is no longer a mystery ship. It was discovered by an expedition out of Grand Cayman and may be one of the most significant finds in the history of underwater archaeology. The discovery was announced by Marine Archaeological Research, Ltd., headed by Captain Herbert Humphreys, Bob Soto and Ken Jackson, who have plans for a marine museum on Grand Cayman.

Dan Koski-Karell, the expedition's archaeologist from Arlington, Virginia, conducted research at the Library of Congress, Washington, D.C., in order to solve the mystery of the 150 foot man of war that lost its entire crew in the hurricane. "Marine archaeology is very similar to detective work," Koski-Karell says. "You sift through evidence and draw log-

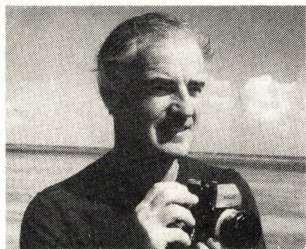
ical conclusions. Two hundred years ago this ship disappeared off the face of the earth, but all information and preliminary dives indicate the HMS *Thunderer* has finally been found."

Good luck in your detective work on your favorite wrecks. Address your questions to me at: Route 2, Box 408, White Hall, MD 21161. Please include a stamped, self-addressed envelope. ✉

ROESSLER BOOKS

Carl Roessler, president of See & Sea Travel, will be well represented in book stores this summer and fall. No fewer than three Roessler books are being published in 1984.

The principal volume is a coffee table book entitled *The Undersea Predators*,



published by Pisces Press in New York. There will be more than 200 color plates illustrating predation among marine animals of all kinds.

Mastering Underwater Photography (William Morrow) is a volume of underwater photography techniques; Roessler discusses his approach to certain marine subjects to assure successful results.

A Diver's Guide to the Cayman Islands examines the finest sites on these famous Caribbean Islands, with photos of undersea terrain and local marine life.

All three Roessler books will be available through your local bookstore, through See & Sea Travel and through a mail order offering in September's SKIN DIVER Magazine. ✉

MA LOBSTER LIMIT

A bill currently before the Massachusetts Legislature would authorize the director of the Division of Marine Fisheries to place a daily lobster catch limit on sport divers. The bill, identified as H-5195, was filed by Rep. Roger Goyette of New Bedford.

During hearings on the idea of a lobster catch limit Fisheries Director Phil Coates admitted that a catch limit was not needed for conservation purposes. Recreational divers account for less than one percent of the lobster catch.

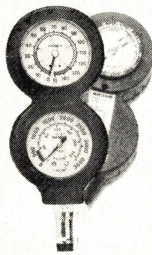
The Bay City Council of Divers (Quincy, MA) requests Massachusetts divers contact their state senators and representatives and ask them to oppose H-5195. Their addresses are in the phone book.

Other possible contacts are Senator Carol Amick and Representative William Nagel (co-chairmen of the Natural Resources Committee), Senate President William Bugler and House Speaker Thomas McGee. ✉

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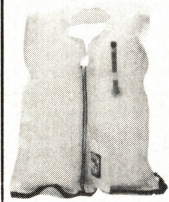
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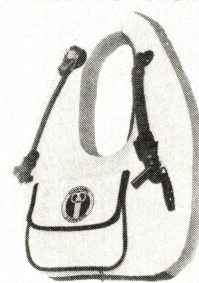
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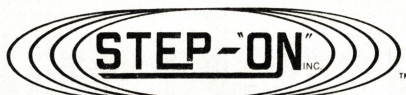
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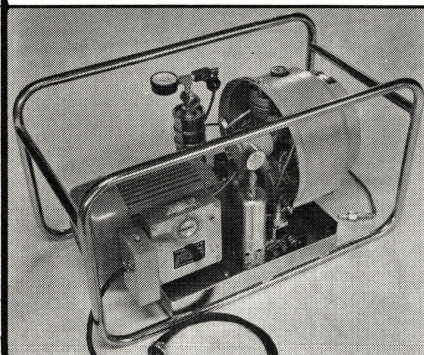
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JIM AND WASP TRAINING

(Continued from Page 59)

of their class; additionally, they must be recommended by their course supervisor and attend an interview. The ADS staff also look for experience in a number of related disciplines, such as hydraulics, electronics, machine shop, non-destructive testing (NDT), electricity, rigging, welding and well-head servicing. Because of the size of the suits, trainees should ideally be in the 5'8" to 6'2" range and weigh between 150 and 210 pounds. Since ADS dives call on both strength and endurance, physical fitness is important. Enrollment is limited to eight students per course and as John Robertson, CO's managing director of operations, and Dick Clark, ADS course coordinator, emphasized, selection is highly competitive: "We want the best people we can get."

College of Oceaneering has built a new facility for ADS training consisting of classrooms and a 20 by 18 foot deep training tank with a handling system for large pieces of equipment, such as well-head components. Since a number of oil-field equipment manufacturers already modify their subsea components for servicing by JIM and WASP and since new methods and systems are constantly being evaluated, it is anticipated that a good deal of cooperative testing will be conducted at the school.

Students in the ADS course start out in JIM and then, according to how quickly they become proficient, move on to WASP. The total water time during the course for each man works out at 30 hours, the time being divided, on average, into 20 hours for JIM and 10 for WASP. The first dive in JIM—as I can personally attest—is largely consumed with learning how to walk; until the student gets the hang of the rolling, swinging gait, he tends to move in an inelegant series of fits and starts. To turn, he must lean to one side, lift the opposite foot and put it down in the direction he wants to go—a maneuver that is not nearly as simple as it sounds. If he becomes overeager and leans too far forward, he falls flat on his face; if he leans too far back, he tips over. Recovery from either position is accomplished by shifting the body so the suit returns to the upright position. At the suggestion of Dr. Art Bachrach of the Naval Medical Research Institute and co-chairman of CO's board of advisors, a stainless steel mirror has been placed in the tank so trainees can watch their movements—a procedure that speeds up the learning process.

With the basics of locomotion under his belt, the student is ready to practice 360 degree turns in place (of crucial impor-

tance in confined spaces) and then move onto more ambitious exercises such as rolling, crawling, hopping, threading his way through a mini obstacle course and "playing" on Dr. Bachrach's "JIM Gym." Despite the apparent bulk of the suits, experienced operators can accomplish such movements with ease. A U.S. Navy film shows a JIM diver performing all of the above, as well as pulling himself hand-over-hand along a line in a one-knot current. Climbing a nine inch step, lifting an 80 pound weight and walking on soft sand and mud with modified snowshoes are all within the capabilities of trained operators.

For the manipulative skills phase of the JIM training, a workbench is lowered into the tank. Here the student works on projects such as threading nuts, attaching hydraulic lines and connecting hose fittings, passing straps and wire slings and making up shackles. The claw manipulators common to JIM and WASP take the place of hands and are operated by a handle enclosing a T-bar; pushing or pulling on the bar opens and closes the jaws, screwing it in or out adjusts the opening, while turning the handle takes care of rotation. With practice an operator can even tie knots; as one veteran ADS diver told me: "About the only thing we can't do is splice."

Once the student has mastered the intricacies of JIM, he is ready to move on

to WASP. WASP, with its thrusters and variable buoyancy has the maneuverability of a helicopter. Since it has the capability of working anywhere between the surface and the seafloor the student now becomes more a pilot than a diver. The two pairs of foot switches that operate the thrusters give him complete control without having to remove his hands from the manipulators. Flying such a machine in open water, I am told, is about as close to freedom as an enclosed diver can hope to get.

Learning to operate WASP takes less time than gaining proficiency in JIM; even so, carrying out an intricate task in mid-water—such as juggling a ratchet onto a nut and tightening it—is no easy job. For this reason the bulk of the WASP exercises are conducted off the bottom of the floor to simulate working conditions. Since WASP is used extensively for inspection and maintenance of deep water platforms, students are instructed in the operation of the hydro-blaster, a high pressure water jet that cleans structural members down to bare metal so that non-destructive tests can be carried out. Students also learn to use photo and TV equipment with the WASP (a TV camera can be mounted on the belly) and take readings with NDT tools such as wall thickness probes, corrosion meters and potentiometers. As CO already runs an NDT course as an elective, the necessary

equipment and expertise is available.

In the final weeks of the program, students concentrate on the kinds of projects they will be called on to carry out in the field, using both JIM and WASP. A typical example would be the replacement of guide wires on a drilling guide-base with special tools made up for a specific manufacturer's equipment.

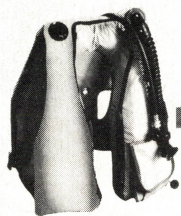
Just as important as in-water training is the portion of the course devoted to servicing. Although there is always a maintenance specialist on every ADS team—who may or may not be an operator—crew members must be capable of servicing the CO₂ removal and oxygen systems, the limbs and manipulators and the lift termination point. Since the hull of the Type II JIM is of cast magnesium, regular inspection of the protective coating is important to prevent corrosion. ADS limbs are interchangeable and can be removed in a matter of minutes, a feature which permits retrofitting with updated arms and/or legs, as they become available, and allows, particularly with JIM, rapid crating for transportation by helicopter.

Although CO has just started running scheduled ADS courses, the college recently put on a 14 week program for a group of Columbian Navy salvage divers which included, at the request of that government, instruction in JIM and WASP; and in 1979 the school trained

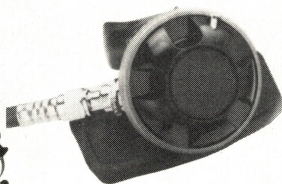
(Continued on Page 128)



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Height

Weight

- _____ Ankle
- _____ Calf
- _____ Knee
- _____ Thigh
- _____ Hips
- _____ Waist
- _____ Chest
- _____ Neck
- _____ Wrist
- _____ Forearm
- _____ Elbow
- _____ Biceps
- _____ Ankle to Knee
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The most important thermal problem underwater is loss of body heat and development of stress from it. Water of 70-72°F is cool enough to produce significant thermal loss when a diver is submerged without protective covering. Because water conducts heat rapidly, the normal pattern of heat loss in comfortable air temperature (65-75°F) is changed to a high rate of heat loss owing to direct contact with the water. The table shown below shows survival times in water.

Water Temperature	Survival Time
32°F	15 minutes
38°F	30 minutes
45°F	2½ hours
55°F	6 hours
65°F	8 hours

Notice that even in water that may be considered of reasonable temperature, a diver stranded without protective clothing would risk death from prolonged exposure. Survival time becomes short as the temperature falls. Immersion in water of 30-40°F without protective dress would be fatal rapidly.

Cold stress produces increased metabolism because of the need to generate heat internally to account for loss through the skin. With even small amounts of heat loss, the heart and circulation increase their activity to provide more blood flow to the muscles. In some divers, the added load to the heart may cause abnormal heart rhythms and severe fatigue when exercise is attempted in cold water. If the body temperature falls below 96° F, then body metabolism starts to fall, and as temperature declines, metabolism goes even lower with unconsciousness ultimately occurring. Hypothermia of this severity is rare in sport diving.

Blood flow to various body tissues varies with thermal stress. Cold exposure causes constriction of blood vessels in



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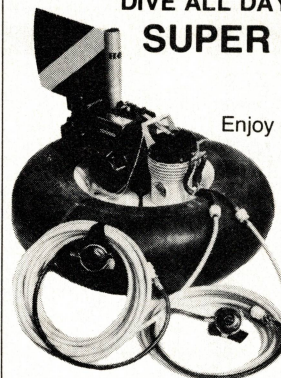
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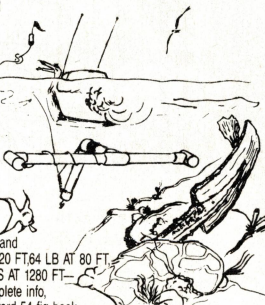
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the skin which makes the skin a better insulator. This constriction is controlled by the brain which senses body temperature and protects the body from heat loss when a fall in temperature is detected. The brain signals include: blood vessel constriction in the skin; increase in heart activity; hair erection on the skin ("goose bumps") to add insulation to the skin layers; and increased muscle activity. There is a period where muscles generate heat without shivering, but eventually shivering occurs and muscle metabolism increases to produce heat. When cold constriction of blood vessels in the arms is severe, muscles in the forearm may become stiff and even temporarily paralyzed. Ultimately, control of the fingers and hands becomes impossible because of stiffness. Do not depend on your fingers to get you out of trouble on a cold dive. Fine finger motions may be impossible.

PROTECTION AGAINST COLD

Because ambient temperatures even in the best of conditions will produce heat loss, it is always necessary to consider thermal loss as a problem when diving. Even where water temperatures may be 70-75°F, prolonged exposure (several hours) can cause significant heat loss. Other animal species exposed to frequent water immersion generally develop a thick layer of fat beneath the skin for thermal insulation. Whales and seals, for example, are known for their thick layers of fat and their tolerance to cold water. In addition to the fatty insulation, there is a certain insulation which comes from changes in blood flow to skin.

The best way to achieve thermal balance (no heat loss or gain) is to eliminate direct contact between skin and the water which rapidly conducts heat from the body. This can be done several ways.

WETSUITS

A wetsuit provides good insulation and takes advantage of the insulating properties of water as well. Once the water layer between the skin and the wetsuit is raised to body temperature, it is possible to maintain a reasonable level of thermal protection. It is important to prevent the flow of this warm water from the suit. A loose-fitting wetsuit which allows water to travel in at the head and out at the feet is poor thermal protection. A wetsuit will not provide normal thermal protection in deep diving (100 feet) because of suit compression and thus loss of its insulating characteristics. A wetsuit allows tolerance of water temperatures below 50°F for a reasonable period of time. At 50°F and below, you will lose heat even with a wetsuit. A mechanism somewhat equivalent to a wetsuit can be achieved with ordinary clothing as long as rapid motions in the water are avoided. Clothing of any type can be helpful if the water layer trapped between the clothing and skin is not disturbed by motion.



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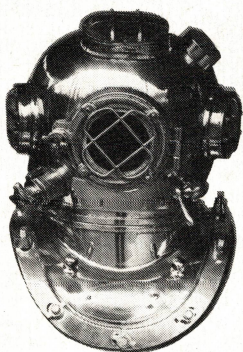
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TREATMENT OF HYPOTHERMIA

The treatment for hypothermia is re-warming. In severe cases this must be done in a hospital under medical supervision. For mild hypothermia, re-warming by exposure to a warm environment is successful. There is a phenomenon called afterdrop which causes the body temperature to fall lower than it was at the time of leaving the water. The cause of afterdrop is thought to be a shift of cold blood from the skin into the central core of the body as the vessels in the skin dilate from the warm environment. Because of afterdrop, body temperature can fall even lower after leaving the cold and rarely, severe hypothermia may occur even though a diver has been removed from the cold. Ingestion of alcohol is not recommended for treatment of hypothermia unless you are in a warm environment. In a cold environment alcohol will dilate the skin vessels and cause further heat loss. Drinking warm fluids will add heat to the body and a warm water bath or a hot shower are good ways to re-warm.

Remember that hypothermia may be insidious. It can dull the mind to the point where inappropriate behavior may prolong exposure to the cold. As function in the hands and fingers diminishes because of stiff forearm muscles and as mental state is dulled, a diver may find himself or herself in a dangerous situation because of progressive hypothermia.

We will have more on thermal stress next month. >

JIM AND WASP TRAINING

(Continued from Page 125)

marine botanist Dr. Sylvia Earle before her 1,250 foot JIM dive off Oahu, Hawaii.

No one knows how far or how fast atmospheric diving systems will evolve, but the staff at CO are already talking of the need for a rating system for ADS personnel and, within a fairly short time, they anticipate organizing separate programs for technicians, operators and supervisors, as well as refresher and updating courses. Modern ADS diving may be only ten years old, but College of Oceaneering is banking on its being here to stay. >

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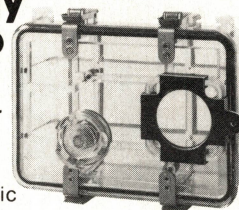


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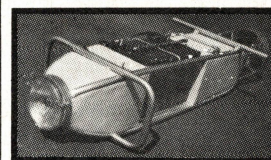


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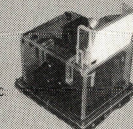
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DACOR'S Turbo Vent II Silicone Contour Snorkel

TEXT AND PHOTOGRAPHY BY BONNIE J. CARDONE

Choosing a snorkel is not an easy task. When SDM collected all models available on the U.S. market four years ago, there were 83 snorkels offered by 18 different companies. There are no fewer today, judging from a look through 1984 dive equipment catalogues. In 1980 it seemed as if all the possibilities for variations in this universal piece of equipment had been exhausted. This has proved untrue. For example, Dacor has combined several time tested features, redesigned some and added a couple more to come up with a snorkel that is different from any other available either this year or in the past.

The Turbo Vent II Silicone Contour has such time tested features as a contoured, large bore barrel, high visibility barrel tip and a swivel mouthpiece. New since our 1980 roundup are the silicone bottom barrel and snorkel keeper. New for 1984 are the regulator style mouthpiece, redesigned self-draining feature and the color of the upper barrel.

Let's examine all these features one by one, starting at the top. With few exceptions, snorkels have tips that make them easy to see while their users are on the surface. Dacor's registered Glo-Top adorns all of their snorkels. It is highly visible during the day and glows at night.

The butyrate plastic upper barrel to which the Glo-Top is affixed is a new, dark blue that matches several Dacor mask rims. Thus, you can have a color coordinated snorkel/mask combination that is quite photogenic.

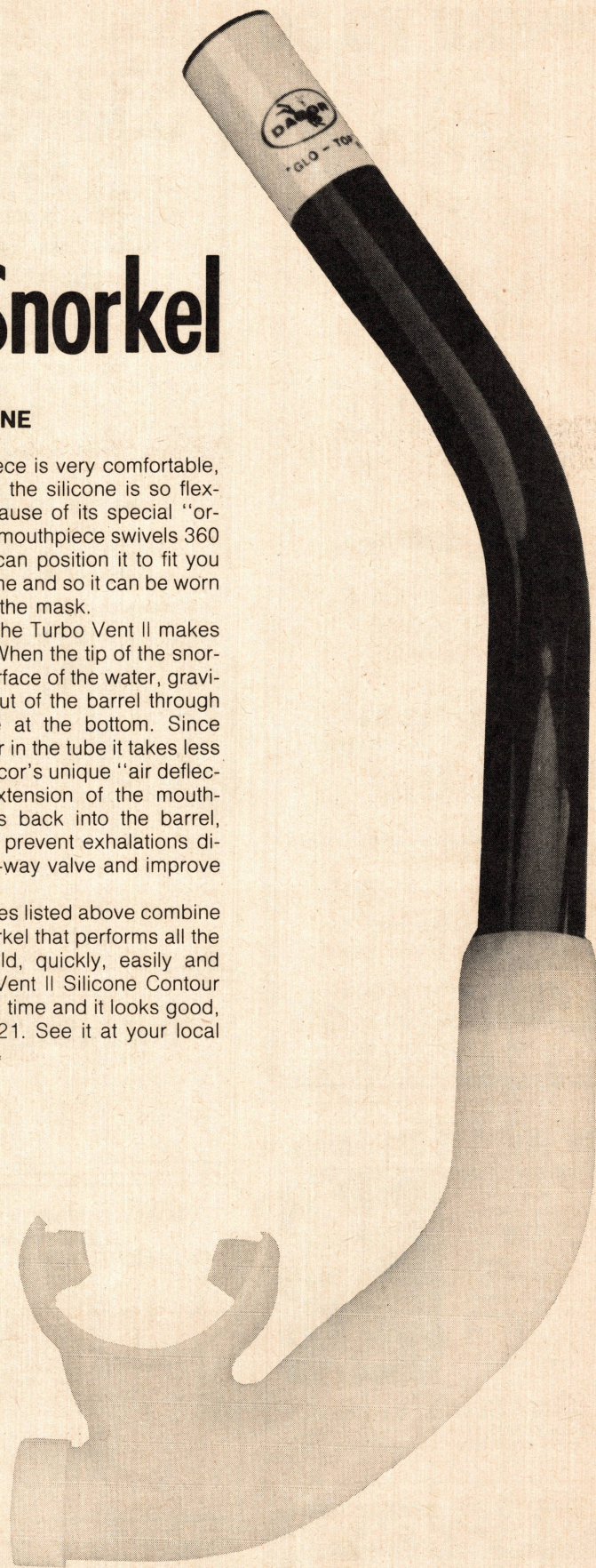
The entire barrel of the Turbo Vent II is contoured to fit the curve of a diver's head. Because of this the tip sticks out of the water vertically, instead of at an angle, when you are snorkeling. This minimizes water entry in the tip of the snorkel on the surface.

The snorkel keeper and bottom barrel of the Turbo Vent II are silicone. This material is hypoallergenic as well as soft and extremely durable. It is resistant to ozone and lasts practically forever. The regula-

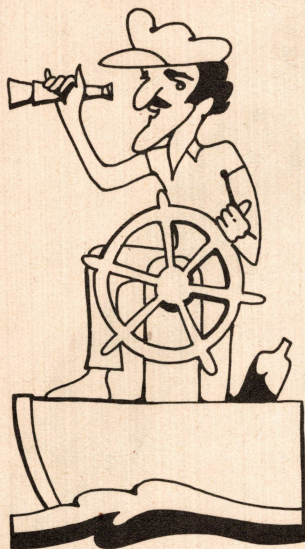
tor style mouthpiece is very comfortable, not only because the silicone is so flexible but also because of its special "ortho" design. The mouthpiece swivels 360 degrees so you can position it to fit you perfectly every time and so it can be worn on either side of the mask.

The design of the Turbo Vent II makes clearing it easy. When the tip of the snorkel breaks the surface of the water, gravity forces water out of the barrel through a one-way valve at the bottom. Since there is less water in the tube it takes less effort to clear. Dacor's unique "air deflector vane," an extension of the mouthpiece that angles back into the barrel, was designed to prevent exhalations directly on the one-way valve and improve its efficiency.

All of the features listed above combine to produce a snorkel that performs all the functions it should, quickly, easily and well. The Turbo Vent II Silicone Contour should last a long time and it looks good, too. It sells for \$21. See it at your local Dacor dealer. ~~✕~~



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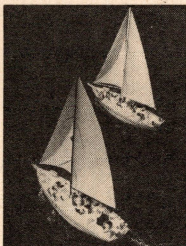
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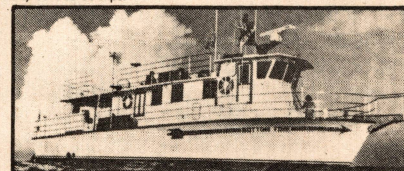
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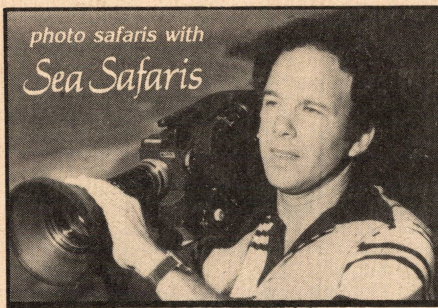
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International Underwater Contractors, Inc. has opened a new office at 10046 Chickasaw, Houston, TX 77041. The office is responsible for the overall marketing coordination of IUC's range of underwater services including diving, ROVs, ADSs and manned submersibles. The office will also market a new underwater geotechnical soil investigation tool called the PAM and will house a 30 foot diameter, water filled test facility for dive training and research.

The new Louisiana representative for IUC is Dennis Burchfield. Based in Lafayette, he will market IUC's inspection, maintenance and rig support capabilities in that area. 🌿

SECOND AB PLANT

Thousands of baby abalone will be planted at Catalina Island (California) on August 6, when commercial divers join recreational divers for the Second Great Abalone Plant.

The event is a follow-up to the successful abalone plant that took place off San Miguel Island last August, when sport and commercial divers planted 9,000 reds. Divers have recently reported seeing these abalones "all over the place" in the area where they were planted, growing from their planting size of 10 mm to 2-3 inches in one year.

For the Second Great Abalone Plant, 50 divers will travel to Catalina aboard the *Westerly* and the *Golden Doubloon*, out of the 22nd Street Landing, San

Pedro. During the evening before the dive, on August 5, commercial divers will conduct an orientation for the sport divers with a film and discussion of abalone planting techniques.

A total of 5,000 abalones will be planted, most of them greens. However, a small number of the animals will be a new, green-red hybrid developed by John McMullen at Ab Lab, Pt. Hueneme. The green-red hybrid combines the fast-growing capability of the red abalone with the green, which can live in Catalina's warmer waters. Red abalones are found in cooler, more northern waters.

One site to be planted will be Lover's Cove, a protected marine reserve near the city of Avalon.

The fee for participating divers is \$75 each, which will pay for the baby abalones. Additional money for the planting will come from a number of fund-raising events in Avalon on August 1.

Interested divers can contact sport diving coordinator Dexter Kelly, 6665 Green Valley Circle #220, Culver City, CA 90230; (213) 645-8908. 🌿

BERMUDA DIVES

Blue Water Divers, a subsidiary of Dave McLeod's Skin Diving Adventures, Ltd. is offering daily two tank dive trips to some of Bermuda's finest, yet most remote dive sites.

Manager/operator Michael Burke, an SSI advanced open water instructor and licensed instructor and pilot (by the Bermuda Government) will be offering experienced divers trips to wrecks such as the *Cristobal Colon*, *Caraquet* and *Aristo*.

There will be frequent deep dives, night dives and wreck hunting trips to locate some of the suspected thousands of ancient shipwrecks lying undiscovered in Bermuda's barrier reef system. 🌿

BALI HOTEL

The Hotel Bualu in the resort of Nusa Dua in Bali is on a white sand beach only 10 minutes from the international airport. It offers 50 deluxe rooms in two story Balinese style buildings, surrounded by tropical gardens. All rooms are air-conditioned and have private balcony or veranda, bathroom with hot and cold water, radio and telephone. Color TV sets are available free of charge. The resort features a restaurant specializing in Indonesian cuisine and seafood as well as Italian and continental dishes. Room service is available 24 hours a day.

Two conference facilities (seating 60 each) are fitted with A/V equipment and there are sport facilities including: swimming pool, beach pavilion, sailboarding, sailing, snorkeling, horseback riding, tennis, bicycle riding and others.

Scuba diving facilities include a complete dive shop with rentals; a compressor and 40 tanks; a native outrigger (six divers) and a 28 foot Zodiac (18 divers); tours and instruction. 🌿

CO SCHOLARSHIP WINNER

College of Oceaneering student Walter Wenzell is the recipient of the Deborah Allen Brennan Memorial Scholarship, an award sponsored by the college and jointly administered by the National Association of Underwater Instructors (NAUI).

A current resident of Long Beach, Wenzell is a five year veteran of the Coast Guard and former owner/operator of Wenzell Diving Service in Northport, New York. He previously attended Allegheny Community College and Lewis A. Wilson Technological Center where he received his welding certification.

The scholarship, one of six awarded annually, was named after the first female to complete the course in commercial diving at the College of Oceaneering, which was known at the time as Commercial Diving Center. 🌿

MARTINI MOVES

Martini Scuba, a PADI training facility in Yonkers, NY, is moving into new, expanded quarters this month. These new quarters will be at 2037 Central Park Avenue and will include a large, modern retail area and repair department. A classroom and on-premises, enclosed, heated pool will be used for skin and scuba diving instruction at all levels of certification.

The instructional program will be directed by Ernie Feleppa, a PADI master scuba diver trainer. The specialty course schedule for the summer and fall will include rescue, night, research, chamber orientation, diving physiology, photography, and master scuba diver. Divemaster and assistant instructor courses will also be scheduled.

A full range of equipment will be available for purchase or rental; drysuit purchases will include pool instruction on their use. Those who attend the grand opening will receive valuable discounts on dive gear, instruction and travel. 🌿

STONEMAN AWARDS

The Foundation for Ocean Research recently presented the 1984 John Stoneman Marine Environmental Award to Norine Rouse and John Fine. This annual award recognizes the efforts made by certain individuals to give people a better understanding and appreciation of the marine environment.

The directors of the Foundation for Ocean Research and Mako Films Ltd. decide in February of each year who the next recipient of the award will be. The 1985 recipient will be Captain Don Stewart of Habitat in Bonaire for his continuing efforts to preserve the coral reefs of Bonaire and to further educate all to the fragile nature of these vulnerable and fragile communities.

Those wishing to nominate or suggest possible contenders for this important annual award should contact the secretary of the Foundation for Ocean Research, 25 St. Mary Street, Suite #101, Toronto, Ontario, Canada, M4Y 1R3. 🌿

DIVER'S DIRECTORY



Advertising rates: \$129.00 for three consecutive ads, \$222.00 for six consecutive ads, \$336.00 for a full year. DEADLINE: 28th of 3rd month prior to publication. PAYMENT MUST ACCOMPANY COPY. Send all material to: Diver's Directory, c/o Direct Response Advertising, P.O. Box 69910, Los Angeles, CA 90069.

ALABAMA

MCWHORTER ENGINEERING CO. 205/836-2814
on Bull Shoals Lake, P.O. Box 348, Bull Shoals, AR 72619
PADI instr. available. Full service dive shop, air station.
Rebults, parts, accessories, ASME coded.
HP air compressors, units, systems, since 1952.

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RICK'S PRO DIVE N' SKI SHOP, INC. 501/753-6004
4701 J.F.K. Bl., (N. Park Mall), N. Little Rock, AR 72116
Arkansas' only PADI 5 star training facility. Dive boat,
camera rentals, dv. vacations. We teach 8 PADI specialties.

CALIFORNIA

AQUATICS OF SANTA BARBARA 805/964-8689
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Instruction: Basic, refresher to advanced courses.

ARGO DIVING SERVICES 213/510-2208
314 Metropole, P.O. Box 1201, Avalon, CA 90704
Guided underwater tours and instruction by
Jon Hardy on Catalina Island. Free information.

BIRNS OCEANOGRAPHIC, INC. 213/462-8868
1010 N. Highland Ave., Los Angeles, CA 90038
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CATALINA DIVERS SUPPLY 213/510-0330
Avalon, Catalina Island, CA 90704
Rentals, sales, air, 2 locations.
Pleasure Pier and Avalon Underwater Park.

GUCCIONE'S SCUBA HABITAT 714/594-7927
3220 Brea Canyon Rd., Diamond Bar, CA 91765
Sales, service, PADI training facility, air, rental, dive
charters. Corner of Brea Canyon & Diamond Bar Bl. at 57 fwy.

LAGUNA SEA SPORTS
6959 Van Nuys Bl., Van Nuys, CA 91405 213/787-7066
22767 Hawthorne Bl., Torrance, CA 90505 213/373-9364
Air, rental, instruction.

LAGUNA SEA SPORTS
925 N. Coast Hwy., Laguna Beach, CA 92677 714/494-6965
2146 Newport Bl., Costa Mesa, CA 92627 714/645-5820
6343 Magnolia Ave., Riverside, CA 92506 714/683-6244

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PROFESSIONAL S.C.U.B.A. REPAIR 818/769-1484
5725 Cahunga Bl., No. Hollywood, CA 91601
Professional repair is our only business.
Servicing all makes and models of equipment since 1961.

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TRI-VALLEY SCUBA SCHOOL, INC. 415/828-5040
21310 San Ramon Valley Bl., San Ramon, CA 94583
Scubapro Dealer & full line of major brands.
The East Bay's 'full service' pro dive store.

WET PLEASURE 408/984-5822
2350 El Camino Real, Santa Clara, CA 95051
Formerly S. Steele's Scuba, Inc.
Major brands stocked. NAUI, PADI, YMCA lessons.

COLORADO

DENVER DIVERS SUPPLY 303/399-2877
557 Milwaukee St., Denver, CO 80206
NASDS instruction, sales, rentals, repairs.
Travel is our specialty.

CONNECTICUT

CENTRAL SALES SCUBA 203/283-5007
136 Carter Rd., Thomaston, CT 06787 Ken Mischo, owner.
Connecticut's most affordable dive shop. \$1 air fills.
Classes, rentals, hydros, trips, repairs, used gear.

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ORBIT MARINE SPORTS CENTER, INC. 203/333-DIVE
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Sales, rentals, repairs, air, hydro testing, trips,
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PADI facility, air, sales, service, rentals, dive charters,
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CRYSTAL ISLES RV RESORT 904/795-3774
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Dive in springs.

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31' custom boat, 6 max. Free: guided dvs., use of U/W camera.
Dive pkgs. avail. Recommended by Undercurrents, 3/82.

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Bahamas/Pennekamp, grp. rates, dive, snkl., sail, shell collect,
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PADI training facility. Nicest boat in Keys. We beat any deal.

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Moon Bay deluxe 2 BR, 1 1/2 bath w/dock, sleeps 6.
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Lobster diving & spearfishing, rentals, air.

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AQUATICS KAUAI 808/822-9213
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Photography and video taping of dive trips.

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5 day scuba classes. Undercurrent #1 recommendation.

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Since 1971, free info, jet ski, water ski, scuba repairs.

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Fascinating, fun charters. Dvg. w/ a difference, we care!

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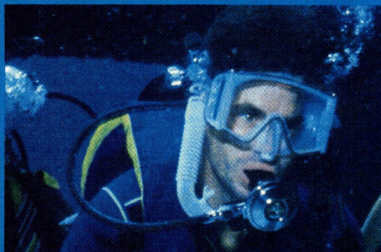
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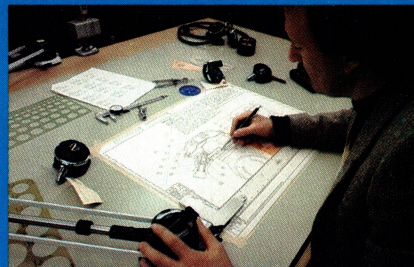
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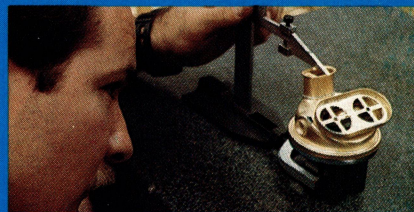
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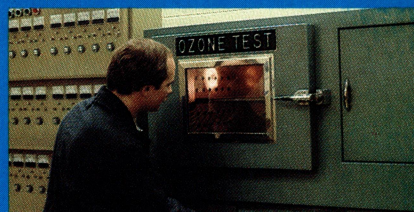
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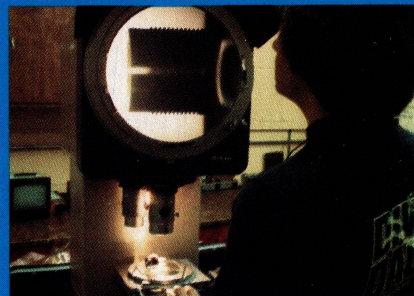
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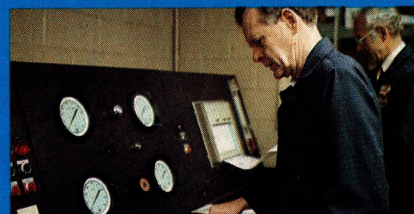
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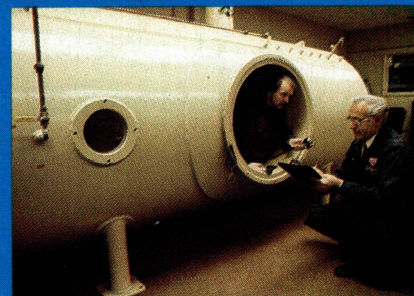
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